

CHESTERFIELD COUNTY

www.chesterfield.gov/ManagementServices/Purchasing/purchase.asp

Our vision is to be recognized by our customers and professional peers as an innovative provider of excellence in customer service and as a leader in the purchasing profession.

Our mission is to support our customers in performing their mission by providing quality purchasing services.



SPECIFICATIONS AND INVITATION FOR BIDS

**Purchasing Department
9901 Lori Road
P. O. Box 51
Chesterfield, VA 23832-0001
Telephone No. (804) 748-1617**

**CHESTERFIELD COUNTY PURCHASING DEPARTMENT
GENERAL TERMS, CONDITIONS, AND INSTRUCTIONS
IMPORTANT - READ CAREFULLY BEFORE SUBMITTING BID**

1. SUBMISSION AND RECEIPT OF BIDS:

- a. Sealed bids shall be received until, but no later than the specified time and date of opening as designated in the invitation. Late bids shall be rejected. **Bids, to include addenda or changes to a response, shall not be accepted via a FAX machine or by Internet E-mail.**
- b. In the event that Chesterfield County is closed due to inclement weather and/or emergency situations prior to or at the time set aside for the published bid opening, the bid opening date will default to the next open business day at the same time.
- c. All bids shall be signed on the Terms and Signature Sheet in order to be considered. Bids submitted without a signature shall be rejected. If the Bidder is a partnership or corporation, the Bidder shall show the title of the individual signing the bid, and if the individual is not an officer of the partnership or corporation, if requested, the Bidder shall submit proof that the individual has the authority to bind the partnership or corporation.
- d. **Only when specifically requested in the white pages of the Bid Documents,** shall each bid be accompanied by a bid bond with surety satisfactory to the County Attorney or a Cashier's or a Certified Check, made payable to the Treasurer, Chesterfield County, in an amount equal to five percent of the total bid price. In the event of default by the Bidder, the five percent deposit shall be and represent liquidated damages to the County. Bids received without a bid bond, when specifically requested, shall be rejected.
- e. Bids concerning separate bid invitations are not to be combined on the same form or placed in the same envelope. Bids submitted in violation of this provision may not be considered.
- f. Unless otherwise specified, Bidders are to use the bid form furnished by the County.
- g. No bid shall be altered or amended after the specified time for opening.

2. AMENDING BIDS: Amending or withdrawing bids by a potential bidder prior to bid opening: A potential bidder may amend and/or withdraw a bid before the due date and time set for receipt of bids. All requests from a potential bidder to return their bid shall be in writing, addressed to the Purchasing Department, and signed by a person authorized to represent the person or firm that submitted the bid. The potential bidder may be contacted by telephone to verify the authorization of the return request and the signature involved if there is doubt as to the documents authenticity. **All amendments/alterations to the bid are to be initialed by an individual authorized to represent the person or firm that submitted the bid.**

3. WITHDRAWAL OF BIDS:

Withdrawal: Construction (*Code of Virginia 2.2-4330*)

- a. A bidder for a public construction contract, other than a contract for construction or maintenance of public highways, may withdraw of his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. If a bid contains both clerical and judgment mistakes, a bidder may withdraw his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid which shall be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn.

No bid may be withdrawn after the scheduled closing time for receipt of bids for sixty (60) calendar days, except as provided in Section 2.2-4330(A)(i), *Code of Virginia*, which states the bidder shall give notice in writing of his claim of right to withdraw his bid within two business days after the conclusion of the bid opening procedure. Any withdrawal request made to the Director of Purchasing must be accompanied by bidder's original work papers, or such request will be rejected.

In order for work papers, documents and materials submitted pursuant to this section to be deemed a trade secret or proprietary information pursuant to *Code of Virginia*, subdivision F of 2.2-4342, a bidder must expressly invoke the aforementioned statute in the notice of withdrawal and specifically state the reasons why protection under 2.2-4342-F is necessary.

Withdrawal: (other than construction)

- b. A bidder for a public contract may request withdrawal of his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake therein, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or unintentional omission of a quantity of work, labor, or material made directly in the compilation of the bid which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents and materials used in the preparation of the bid sought to be withdrawn. If a bid contains both clerical and judgment mistakes, a bidder may request withdrawal of his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor or material made directly in the compilation of a bid which shall be clearly shown by objective evidence drawn from inspection of original work papers documents and materials used in the preparation of the bid sought to be withdrawn. In order for work papers, documents and materials submitted with the notice of withdrawal to be deemed a trade secret or proprietary information pursuant to *Code of Virginia*, subdivision F of 2.2-4342, a bidder must expressly invoke the aforementioned statute in the notice of withdrawal and specifically state the reasons why protection under 2.2-4342-F is necessary.

4. DENIAL OF WITHDRAWAL OF BID: (*Code of Virginia* 2.2-4330)

If the County denies the withdrawal of a bid, it shall notify the bidder in writing stating the reasons for its decision and award the contract to such bidder at the bid price, provided such bidder is a responsible and responsive bidder.

5. MISTAKES IN BIDS

- a. Mistakes discovered following bid opening but prior to award: If there is a significant and obvious disparity between the prices of the lowest apparent responsive bidder and other bidders, the low bidder may be contacted by the purchasing authority to confirm the bid price. This does not relieve a bidder from the responsibility for the submission of a correct bid. If the bidder then alleges a mistake in the bid and can provide clear and convincing evidence that supports the existence of a clerical error to the satisfaction of the purchasing authority, the bid may be withdrawn only after approval by the County.
- b. Mistakes discovered after award: Bids containing mistakes by bidders shall not be withdrawn after award of a contract or issuance of a purchase order.

6. PRICING:

- a. Bidder warrants by virtue of bidding that prices, terms and conditions quoted in his bid will be firm for acceptance for a period of sixty (60) days from the date of bid opening unless otherwise stated by the County or Bidder.
- b. Prices should be stated in units of quantity as specified in the bid form. In case of error in extension of prices in the bid, the unit price shall govern.
- c. When a bid is for goods and/or services to be delivered on a one time only or staggered basis, only firm pricing shall be given consideration. General terms such as "price in effect at time of delivery" shall not be considered for award.

7. **PERFORMANCE AND PAYMENT BOND:** When requested in the bid, the County shall require the successful bidder to furnish a performance bond and labor and material payment bond with surety satisfactory to the County Attorney in the amount of the contract price at the time of or prior to execution of the contract. If bonds are requested in the bid, the successful Bidder shall pay the cost thereof; if not specified, the successful Bidder, when requested to do so, shall secure the bonds and the County shall pay the cost thereof.
8. **DELIVERY POINT AND TERMS:** All items shall be delivered F.O.B. destination, and freight, delivery costs, and incidental charges shall be included in the bid price(s). Failure to do so may be cause for not making award to a Bidder. The Bidder shall assume all liability and responsibility for the delivery of merchandise in good condition to the specified delivery location(s).
9. **PAYMENT TERMS:** If discounts for prompt payment are offered by the bidder, it is required that a minimum of twenty (20) days be allowed for payment. Discounts for prompt payment will not be considered in the evaluation of bids. Discounts for prompt payment will be shown on the purchase order/contract and taken if invoices are processed and payment made within the stipulated time frame. If discounts are not offered, payment shall be made thirty (30) days after receipt of an accurate invoice by the County.
10. **USE OF BRAND NAMES/SUBSTITUTIONS:** Unless otherwise specified in the invitation to bid, the name of a certain brand, make or manufacturer does not restrict bidders to the specific brand, make or manufacturer named; it conveys the general style, type, character, and quality desired, and any product which the County in its sole discretion determines to be the equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, shall be accepted.

In requesting a proposed substitution, the bidder shall submit with the bid form the name of the manufacturer, model number, and complete specifications on the proposed substitution for evaluation by the County. The bidder shall submit, with the bid form, a detailed list of any deviations from these specifications, written or implied. The bidder assumes responsibility for all changes in the work required as a result of the proposed substitution, including any change not listed in the request, but determined by the County to be necessary at a later point of progress in the work.

It shall be understood that the burden of proof for an "equal" product shall be and remain the sole responsibility of the bidder. The County's failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the contract documents, and all products furnished by the listed manufacturer must conform to such requirements. The County's decision of approval or disapproval of a proposed substitution shall be final.

11. **QUALITY:** All materials used for the manufacture or construction of any supplies, materials, or equipment covered by this bid shall be new. Unless otherwise specified in bid, products bid must be new, the latest model, the best quality, and the highest grade workmanship.
12. **ACCEPTANCE OF MATERIAL:** The goods and/or services delivered as a result of this bid shall remain the property of the seller until a physical inspection is made, and thereafter accepted to the satisfaction of the County. In the event the goods and/or services supplied to the County are found to be defective or do not conform to specifications, the County reserves the right to cancel the order upon notice (verbal or in writing) to the seller and return goods to seller at the seller's expense.
13. **DELIVERY:** In the appropriate space, the bidder shall state the time of proposed delivery or project completion in number of calendar days. Unless otherwise specified, quote the earliest delivery possible, as this may be considered a factor in making award. Delivery expressed in calendar days may be given preference over such general terms as "stock", "immediately", and "as soon as possible". As time will be of the essence for any orders placed as a result of this bid, the County reserves the right to cancel such orders, or any part thereof, without obligation, if delivery is not made at the time(s) specified on bid form.
14. **COPYRIGHTS OR PATENT RIGHTS:** The bidder certifies by submission of bid that there has been no violation of copyrights or patent rights in manufacturing, producing, or selling the product or services shipped or ordered as a result of this bid. The successful bidder shall, at his own expense, defend any and all actions or suits charging such infringement, and will save Chesterfield County, its officers, employees, and agents harmless from any and all liability, loss, or expense incurred by any such violation.

15. **SAMPLES:** Evidence in the form of samples may be requested if brand being quoted upon is other than as specified. The County reserves the right to request that such samples be furnished at the time of bid opening. The County also reserves the right to request samples after the date of bid opening. Requested samples shall be furnished free of expense to the County and if not used in testing or destroyed, will, upon request at the time of submission of sample, be returned at the bidder's expense.
16. **TAXES:** Chesterfield County is exempt from payment of Federal Excise Tax and State and Local Sales and Use Tax on all tangible personal property purchased or leased by Chesterfield County for its use or consumption. Tax exemption certification will be furnished upon request. Sales tax, however, is paid by Chesterfield County on materials and supplies that are installed by a contractor and become a part of real property. Contractors are not exempt from paying taxes on these categories, as they are considered to be a cost of doing business and should be considered in pricing when preparing a bid.
17. **LICENSES, PERMITS, AND FEES:** All bids submitted shall have included in price the cost of any business and professional licenses, permits, or fees required by Chesterfield County or the Commonwealth of Virginia.
18. **SIGNED BID CONSIDERED AN OFFER:** This signed bid shall be considered an offer on the part of the bidder and shall be deemed accepted upon approval by Chesterfield County. In case of default by the successful bidder, or failure to deliver the goods and/or services ordered by the time specified, the County may terminate the purchase order and/or contract, and after due notice (verbal or in writing) may procure them from other sources and hold the defaulting bidder liable for any resulting additional cost.
19. **QUALITY EXPECTATION STATEMENT:** Chesterfield County, through its "Total Quality Improvement" initiative, is a recognized leader in providing quality products and services at the most effective cost possible. Therefore, the County fully expects, requires, and shall hold all Contractors, and all agents, staff, representatives, and subcontractors of the Contractor, responsible for, and accountable to, the highest quality standards of professional workmanship, products and services. In the spirit of the County's total quality improvement initiative, the Contractor shall be expected to become a member of the team and perform or provide all work, services and products with a target of "zero defects - zero rework".
20. **AWARD PHILOSOPHY:** Award will be made by the County to the lowest responsible bidder with the lowest responsive bid which is in substantial conformance with the terms, conditions, and specifications of the bid and is in conformance with the *Code of Chesterfield County* and the *Code of Virginia*.

Chesterfield County reserves the right to accept or reject any or all bids or parts of bids, to waive informalities, and to request rebids. The County also reserves the right to award the bid in a manner which the County deems will best serve its interest. Bids making exceptions to the terms and conditions included in this invitation may be considered, but preference may be given to bids with no exceptions taken. It further reserves the right to award the bid on a split order basis, lump sum, or individual item basis, or such combination as shall best serve the interest of the County, unless otherwise specified. The County may award a bid to a single contractor or to multiple contractors. It also reserves the right to increase or decrease quantities at the unit price bid.

21. **FACTORS OTHER THAN PRICE IN AWARD DECISION:** The following factors in addition to price (as they apply) shall be a consideration in the award decision:
 - a. The ability to provide references which may substantiate past work performance and experience in the type of work required for the contract. The lowest responsive bidder(s) may be required to furnish a contractor qualifications statement, to include references, prior to any such award. The County may contact all references furnished by bidders. The right is further reserved by the County to contact references other than, and/or in addition to, those furnished by the bidder. If, in the sole opinion of the County, a bidder is determined to be non responsible as a result of any investigation conducted by or for the County, award will not be made to that bidder.
 - b. The quality of performance/workmanship of previous contracts for goods and/or services delivered to or performed for the County.
 - c. The timely completion of previous contracts for services or the timely delivery of past orders for goods.

- d. The sufficiency of financial resources and its impact on ability of the bidder to perform the contract or provide the services.
 - e. The County reserves the right, at its option, to conduct on-site inspections of any bidder's facilities prior to award. The results of any such inspection will be considered by the County in determining bidder's capabilities of successfully administering the contract.
 - f. The ability and availability of the bidder to provide both quality and timely maintenance, service, and/or parts.
 - g. The resale value, life cycle costing and value analysis of a product.
 - h. The availability and capability of local and regional vendor support as it affects the quantity, quality, and timeliness of the goods and/or services.
 - i. Timely delivery of goods or timely completion of services as stated by bidder.
 - j. Substantial compliance or noncompliance with specifications set forth in bid as determined by the County.
 - k. Inventory capability as it relates to a particular bid.
 - l. Results of product testing.
22. **STATE REGISTRATION OF CONTRACTORS (IF APPLICABLE):** Attention is directed to Chapter 11, Title 54.1 of the *Code of Virginia* (Re: State registration of contractors when applicable), which requires that all bidders shall show evidence of the proper license under the provision of this chapter before such bid is considered.
23. **INTERPRETATION OF BID:** If any party contemplating the submission of a bid on this invitation is in doubt as to the true meaning of any part of the bid, the Purchasing Department should be contacted. Any change to the Invitation to Bid will be made only by written addendum mailed to prospective bidders at the addresses furnished for such purposes. The County will not be responsible for any changes except as noted through a written addendum.
24. **PROPRIETARY INFORMATION:** Section 2.2-4342-E of the *Code of Virginia* states: Trade secrets or proprietary information submitted by a bidder, offeror, or contractor in connection with a procurement transaction or prequalification application submitted pursuant to subsection B of 2.2-4317 shall not be subject to the Virginia Freedom of Information Act (2.2-3700 et seq.); however, the bidder, offeror, or contractor shall (i) invoke the protections of this section prior to or upon submission of the data or other materials, (ii) identify the data or other materials to be protected, and (iii) state the reasons why protection is necessary.
25. **GOVERNING LAW:** Any contract resulting from this Invitation to Bid shall be governed by the provisions hereof and by the laws of the Commonwealth of Virginia. Any dispute arising out of this Contract shall be resolved in the Courts of the Commonwealth of Virginia, in and for Chesterfield County.
26. **TIE BIDS:** In the case of a tie bid, the County may give preference to goods, services, and construction produced in the County or provided by persons, firms or corporations having principal places of business in the County. If such choice is not available, preference shall then be given to goods and services produced in the Commonwealth pursuant to Section 2.2-4324 of the Code of Virginia. If no County or Commonwealth choice is available, the tie shall be decided by lot.
27. **NONASSIGNMENT:** Parties to any resulting contract shall not assign the contract without written consent of the other(s). If any party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the contract.
28. **AUDIT OF VENDOR RECORDS:** The County reserves the right to audit all vendor records in contracts where payments are based on contractor's records of time, salaries, materials, or actual expense.
29. **NEGOTIATION:** If the bid from the lowest responsible bidder exceeds available funds, the County may negotiate with the low bidder to obtain a contract price within available funds.

30. **SECTION 2.2-4311 CODE OF VIRGINIA:** Every contract for goods or services over \$10,000 shall include the following provisions:
1. During the performance of this contract, the Contractor agrees as follows:
 - a. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
 - b. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
 - c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
 2. The Contractor shall include the provisions of the foregoing paragraphs a, b, and c in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.
31. **APPROPRIATION OF FUNDS:** The continuation of the terms, conditions, and provisions of any resulting contract beyond June 30 of any year, the end of the County's fiscal year, are subject to approval and ratification by the Chesterfield County Board of Supervisors and appropriation by them of the necessary money to fund said contract for each succeeding year.
32. **SCHOOL BOARD:** When goods and/or services are for the benefit of Chesterfield County Schools, the contract shall be entered into on behalf of the Chesterfield County School Board.
33. **REQUIREMENTS CONTRACTS:**
- a. Whenever a bid is sought seeking a source of supply for a requirements contract for goods and/or services, the quantities or usage shown are estimates only. No guarantee or warranty is given or implied by Chesterfield County as to any minimum or total amount that may or may not be purchased from any resulting contracts.
 - b. The County reserves the right, at its sole option, to renew the contract for consecutive terms.
 - c. The County reserves the right to award bids for requirements contracts based on the pricing of the initial term of the contract or any combination of initial and renewal terms.
 - d. The County may award a bid to a single contractor or to multiple contractors.
 - e. The County reserves the right not to renew the contract at the end of the initial term or any subsequent term.
 - f. The County reserves the right to terminate the contract upon written notice to the contractor(s).
 - g. In the event that a requirements contract is awarded for goods and/or services, the County reserves the right to bid individual bulk purchases if the County deems it will best serve their interest.
 - h. It is understood and agreed to between the parties in a resulting contract that Chesterfield County shall not be obligated to purchase or pay for materials under such contract unless and until they are ordered and delivered.
 - i. Bids based on a firm price or those including a "downward escalator" clause for a requirements contract term may be given preference over lower ones bearing an "escalator" clause.
 - j. The County has the right to extend this contract up to and not to exceed one hundred twenty (120) days following the last term of renewal.

34. DRUG FREE WORKPLACE

During the performance of this contract, the contractor agrees to:

- a. Provide a drug-free workplace for the contractor's employees
- b. Post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition
- c. State in all solicitations or advertisements for employees placed by or on behalf of the contractor that the contractor maintains a drug-free workplace
- d. Include the provisions of the foregoing clauses in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

35. **ENVIRONMENTAL MANAGEMENT:** Vendor/Supplier/Contractor shall be responsible for complying with all federal, state, and local environmental regulations relating to transportation, handling, storage, spillage and any other aspect of providing the services specified herein, as applicable.
36. **SECTION 2.2-4343.1 CODE OF VIRGINIA:** Chesterfield County does not discriminate against faith-based organizations.

CHESTERFIELD COUNTY PURCHASING DEPARTMENT
CHESTERFIELD, VIRGINIA 23832-0001
(804) 748-1617

Bid Prepared By:

**Cathy M. Lantz, CPPB
Purchasing Officer**

Invitation To Bid Number:

04-3127-9000

June 17, 2004

Sealed bids, subject to the specifications and conditions contained herein and attached hereto, will be received in the Purchasing Department, Chesterfield Administration Building, Room 402, until, but no later than **3:00 p.m.** Local Time Prevailing **July 12, 2004**, and then publicly opened and read aloud for **furnishing all labor, equipment and materials necessary for New Soccer Field #20 and Irrigation Improvements at Daniel Park at Ironbridge for the Chesterfield County Parks Department.**

If you are an individual with a disability and require a reasonable accommodation, please notify the Purchasing Department (804) 748-1617, three working days prior to need.

To be considered, your bid must be submitted on a copy of this Invitation to Bid. Bidders shall sign this form in the space provided on the Terms and Signature Sheet and return bid document to: Chesterfield County Purchasing Department, Administration Building - Room 402 - Fourth Floor, 9901 Lori Road, P.O. Box 51, Chesterfield, VA 23832-0001. **Mark outside of your envelope with Invitation for Bid #04-3127-9000 and opening date of bid.**

Bids, to include addenda or changes to a response, shall not be accepted via Fax machine or by Internet E-mail.

Time is of the essence and any bid received after the announced time and date for submittal, whether by mail or otherwise, will be rejected. The time of receipt shall be determined by the time clock stamp in the Purchasing Department. Bidders are responsible for ensuring that their bids are stamped by Purchasing Department personnel before the deadline indicated. **Late bids received will be so noted in the bid file in order that the vendor's name will not be removed from the subject commodity/service list.**

Nothing herein is intended to exclude any responsible vendor, his product or service or in any way restrain or restrict competition. On the contrary, all responsible vendors are encouraged to bid and their bids are solicited.

For information pertaining to the bid tabulation and award on this procurement transaction, bidders may access public notification electronically at www.chesterfield.gov/ManagementServices/Purchasing/purchase.asp.

COMMITMENT TO DIVERSITY AND CHESTERFIELD BUSINESSES

Chesterfield County is a rapidly growing progressive community consisting of an increasingly diverse population. This diversity provides for a dynamic and robust community that promotes growth. Chesterfield County believes that all of its citizens should benefit from this economic growth without regard to race, color, religion or economic status.

The county is committed to increasing the opportunities for participation of minority business enterprises, woman-owned businesses and businesses located in Chesterfield County to ensure diversity in its procurement and contract activities. These businesses are encouraged to respond to all Invitations for Bids and Requests for Proposals. In addition, the county strongly encourages each contractor and/or supplier with which the county contracts to actively solicit minority business enterprises, woman-owned businesses and businesses located in the county as subcontractors/suppliers for their projects.

Upon award/renewal of the contract, the successful bidder/offeror shall furnish data requested on the Certification of Subcontractor/Supplier Activity form included in this IFB/RFP document. This information will enable the county to document the dollar level of activity and measure the success of its purchasing and contracting efforts in this endeavor.

DEFINITIONS:

For purposes of Chesterfield County's classification and reporting program, in cooperation with the Virginia Department of Minority Business Enterprise, the following definitions apply:

Woman-Owned Business (WOB) - a business concern that is majority owned by a woman who also controls and operates the business. In this context, "control" means exercising the power to make policy decisions, and "operate" means being actively involved in the day-to-day management.

Minority Business Enterprise (MBE) - a business enterprise that is owned and controlled by one or more socially and economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to: Blacks, Hispanic Americans, Asian Americans, American Indians, Eskimos and Aleuts. (Reference: 2.2-1401 of the *Code of Virginia*)

Chesterfield Business (CB) - any private business enterprise, located within the jurisdictional boundaries of Chesterfield County.

CERTIFICATION OF SUBCONTRACTOR/SUPPLIER ACTIVITY
MINORITY BUSINESS ENTERPRISES, WOMAN-OWNED BUSINESSES
AND CHESTERFIELD BUSINESSES

Project/Contract Name/Number:

Contractors shall furnish the information requested below regarding subcontractor(s) or supplier(s).

(This form will be sent by the Purchasing Department to the contractor for completion at the time of award/renewal, as appropriate.)

Name and Address of Subcontractor/Supplier	(T) MBE	(T) WOB	(T) CB	Commodity or Service	Dollar Amount

If a continuation of this list of subcontractors/suppliers is needed, please attach additional pages to this form.

I have no MBE, WOB or CB applicable to this contract _____(T)

Contractor hereby certifies that the above information is correct.

Complete Legal Name of Firm: _____ Date:_____

Form Prepared By:_____ (Type or Print)

DEFINITIONS

1. **ADDENDUM or ADDENDA** – Shall mean the additional contract provisions in writing by the Owner prior to the receipt of bids.
2. **BID** - The proposal submitted by a Bidder on the Bid Form consistent with the Instructions to Bidders, to complete the Work for a specified sum of money and within a specified period of time.
3. **BIDDER** - An individual, firm, partnership or corporation qualified in accordance with the Virginia Public Procurement Act, and approved by the Owner, that submits a Bid for the Work, either directly or through a duly authorized representative.
4. **BID DOCUMENTS** - All Contract Documents that the Owner or Engineer provides to potential Bidders before the time established for the submission of Bids.
5. **BID SECURITY** - The bond, with corporate surety, supplied by a Bidder to the Owner, and in all respects satisfactory to the Owner's Attorney, that guarantees the Bidder's compliance with the Contract Documents. A certified check or cashiers check payable to the Owner, delivered with the Bid, may also constitute a Bid Bond.
6. **CHANGE ORDER** - An amendment or modification to the Contract properly executed by authorized representatives of the Owner and the Contractor on the form provided in the Contract Documents.
7. **COMPLETION OF THE WORK** - The event that occurs when (1) the Work has been completed, successfully tested and approved in accordance with the Contract Documents, (2) all submittals required by the Contract Documents (including Operation and Maintenance manuals) have been made, and (3) all Punch List items and restoration Work required by the Contract Documents has been completed.
8. **CONSULTANT** – Shall mean a representative designated by the County as consultant for the project, to act as such and designated to be in charge of the work, acting directly through duly authorized representatives of the Owner.
9. **CONTRACT BONDS** - The Performance Bond and Labor and Material Payment Bond executed by the Contractor, with corporate surety and otherwise acceptable in all respects to the Owner's Attorney.
10. **CONTRACT DOCUMENTS** - The Notice to Bidders, Advertisement, General Terms, Conditions and Instructions, Definitions, Bid Form, Bid Bond, Bond Requirements, Contract, Special Conditions, Supplementary General Conditions, Insurance Provisions (including Instructions Regarding Insurance Certificates), Labor and material payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Escrow Agreement (when used), Change Orders, Drawings, Specifications and Addenda, Special Provisions and any other document incorporated by reference into one of these documents.
11. **CONTRACT PRICE** - The amount of money which the Owner and the Contractor have agreed that the Owner will pay to the Contractor for performing and completing the Work.
12. **CONTRACTOR** - The party who has contracted to perform and complete the Work.
13. **ENGINEER** - The Consulting Engineer who has been designated by the County as Engineer for the project, and the Engineer's authorized agents, inspectors or representatives.
14. **EXTRA WORK** – Shall mean work other than that required, either expressed or implied, by the Contract in its present form.
15. **FINAL ACCEPTANCE** - The event that occurs when the Engineer issues to the County or the County issues to the Contractor a written statement that the Contractor has completely performed all Punch List items, has made all necessary submittals to the Owner and/or Engineer and has satisfied all of the Contractor's obligations under the Contract Documents.

16. **FINAL INSPECTION** - The inspection conducted by the Owner or Engineer to determine what items of the Work must be completed by the Contractor in order for Completion of the Work to occur. After the Final Inspection is conducted, the Owner or Engineer shall provide the Contractor with a Punch List that the Contractor must complete in order for Completion of the Work to occur. The Owner may perform the Final Inspection instead of, or together with, the Engineer.
17. **FINAL PAYMENT** - Payment by the Owner to the Contractor after Completion of the Work so that the Contractor has received all payments due him under the terms of the contract documents for performing and completing the Work.
18. **INSPECTOR** - The person appointed by the Owner to carry out instructions given by the Owner and to inspect the Work performed and the materials supplied by the Contractor.
19. **OWNER** - Chesterfield County, Virginia, a political subdivision of the Commonwealth of Virginia, and its duly authorized officials, agents and employees.
20. **PLANS** - All drawings or reproductions of drawings that depict or relate to the Work. A pictorial representation of the Work or some portion of the Work, showing design, location and dimensions.
21. **PUNCH LIST** - The list provided to the Contractor by the Engineer or Owner after Final Inspection that includes all items that the Contractor must complete in order for Completion of the Work to occur.
22. **SITE** - Shall mean the area upon, or in which, the Contractor's operations are carried on and such other areas adjacent thereto as may be designated as such by the Owner.
23. **SPECIFICATIONS** - The directions, provisions and requirements contained in the Contract Documents relating to the method or manner of performing the Work, or to the quantity or quality of materials to be furnished under the Contract Documents.
24. **SUBCONTRACTOR** - Any individual, firm or corporations having a direct contract with the Contractor for the performance of any part of the Work.
25. **SURETY** - Shall mean any person, firm, or corporation that has executed as surety, the Contractor's performance bond securing the performance of this Contract.
26. **TIME OF COMPLETION** - The time agreed upon by the Owner and the Contractor in the Contract by which the Contractor is required to accomplish Completion of the Work, plus any extensions of time granted to the Contractor by the Owner pursuant to the Contract Documents.
27. **THE WORK** - The whole and any part of the construction, labor, materials, equipment, incidentals or services necessary for the Contractor to achieve Completion of the Work as required by the Contract Documents.

SPECIAL BID CONDITIONS

SCOPE OF WORK

The purpose of this Invitation for Bid is to furnish all labor, equipment and materials necessary for New Soccer Field #20 and Irrigation Improvements at Daniel Park at Ironbridge for the Chesterfield County Parks Department.

GUARANTEE

All materials and workmanship shall be guaranteed for a period of twelve (12) months after final acceptance by the County and repairs necessary shall be made by the contractor at his expense.

BONDS

Each bid shall be accompanied by a bid bond from a Surety company satisfactory to the County Attorney or a Cashier's or a Certified Check, made payable to: TREASURER, CHESTERFIELD COUNTY, in an amount equal to five percent of the total bid price.

A Labor and Material Payment Bond and a Performance Bond, each in the amount of 100% of the Contract Price, with a corporate surety authorized to do business in the State of Virginia and otherwise acceptable in all respects to the Owner's Attorney will be required for the faithful performance of the contract. (A sample of the contract is included for review).

Attorneys-in-fact who sign Bid Bonds, Labor and Material Payment Bonds and Performance bonds must file with each bond a certified and effective dated copy of their power of attorney. Each Bid Bond and the accompanying power of attorney should bear the same date. Each Labor and Material Payment Bond and each Performance Bond and the accompanying power of attorney should bear the same date as the date of the Contract.

The party to whom the Contract is awarded will be required to execute the Contract and obtain the Labor and Material Payment Bond and the Performance bond within fifteen calendar days from the date when the Notice of Award together with the Contract is delivered to the Bidder for execution. In case of the failure of the Bidder to execute the Contract within the prescribed time, the Owner may, at his option consider the Bidder in default, in which case the Bid Bond accompanying the Bid shall become the property of the Owner.

RESPONSIBILITY OF BIDDER

The Bidder shall make a careful examination of the project site, shall familiarize himself with existing conditions, and shall satisfy himself as to the quantity and quality of materials and workmanship required for the Work. He shall carefully and thoroughly examine the Contract Documents before submitting a Bid.

LICENSES, PERMITS, AND FEES: All bids submitted shall have included in price the cost of any business and professional licenses, permits, or fees required by Chesterfield County or the Commonwealth of Virginia.

Request for interpretation of plans and specifications should be addressed to Stuart Connock, Jr., Chief of Design and Construction at (804) 751-4484 or (804) 363-2434 or Cathy M. Lantz, Purchasing Officer at (804) 748-1701 to be given consideration and should be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental

instruction will be in the form of written addenda to the specifications which, if issued, will be mailed or faxed to all prospective bidders (at the respective addresses or fax numbers furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

The submission of a Bid shall constitute a warranty by the bidder that he has complied with the requirements of this paragraph. The bidder is bound by his bid and his bid reflects an affirmative representation that he has examined the project thoroughly.

DATE OF COMMENCEMENT AND COMPLETION

The date of commencement shall be established in a written Notice To Proceed issued by the Owner.

ACCESS TO COUNTY PROPERTY

Access to the County's property shall be as follows: coordinated between Stuart Connock, County Representative and the successful Contractor.

LIQUIDATED DAMAGES

If the said work is not completed within the time limit stated, time specifically being of the essence, the Contractor shall be liable, and hereby agrees to pay the Owner as liquidated damages and not as a penalty, the sum of One Hundred Dollars (\$100.00) per calendar day for each and every day that the said work remains incomplete after the expiration of the contract time for completion; the said sum or sums to be deducted from monies due or to become due the Contractor under this contract.

DRAWINGS

NOTE: “The drawings are downloadable”

The drawings, prepared by Hankins and Anderson Consulting Engineers, consist of pages 1-9. If drawings cannot be downloaded, drawings may be obtained by contacting the County Purchasing Department at (804) 748-1617, by e-mail at purchasing@chesterfield.gov or fax (804) 717-6378.

General Contractors may obtain a limit of two (2) sets of drawings at no charge. Additional sets must be purchased (no refund) at a cost of twenty-five (\$25.00) per set, check made payable to: Treasurer, Chesterfield County.

Contractors shall be responsible for any mailing/shipping charges incurred with the distribution of the drawings and/or project manual. Contractor shall be required to furnish their UPS or Fed-X account number, as applicable. Drawings and/or project manual may be picked up from the Purchasing Department at no cost.

NOTICE: The Drawings and Project Manuals are protected by the common copyright laws of the United States of America. No permission to copy or reproduce these documents in any way or any form whatsoever is granted without the express written permission of the Owner/Architect.

Additionally, the drawings are being provided electronically for bidders convenience, but the copies of the signed and dated documents are considered the bidding and working drawings/documents.

INSURANCE

A copy of a Certificate of Insurance shall be required and must be furnished by the successful contractor during execution of the contract. The Certificate of Insurance does not need to accompany the bid.

The contractor shall purchase and maintain in force, at his own expense, such insurance as will protect him and the County from claims which may arise out of or result from the Contractor's execution of the work, whether such execution be by himself, his employees, agents, subcontractors, or by anyone for whose acts any of them may be liable. The insurance coverage shall be such as to fully protect the Owner, the Engineer (if applicable) and the general public from any and all claims for injury and damage resulting by any actions on the part of the contractor or his forces as enumerated above. The Contractor shall furnish a copy of a Certificate of Insurance, **naming Chesterfield County as additionally insured.** Should any of the policies be canceled before the expiration date, the issuing company will mail 30 days written notice to the certificate holder. The Contractor shall furnish insurance in satisfactory limits, and on forms and of companies which are acceptable to the Owner's Attorney and/or Risk Management and shall require and show evidence of insurance coverages on behalf of any subcontractors (if applicable), before entering into any agreement to sublet any part of the work to be done under this Contract.

The following insurance requirements are the minimum that will be acceptable:

1. Worker's Compensation Insurance with statutory limits and Employers' Liability Insurance of \$500,000 for one accident or aggregate disease.
2. Commercial General Liability - \$1,000,000 Each Occurrence Combined Single Limit - Including coverage for XC and U hazards
3. Comprehensive Automobile Liability - \$1,000,000 Each Occurrence Combined Single Limit
4. Umbrella Liability Insurance - \$2,000,000 Each Occurrence

All insurance policies under coverages 2 and 4 above shall name the Owner, as additional insured.

The Contractor shall be responsible for maintaining current certificates of insurance on file with the Owner, and the Insurance Company shall be responsible for notifying the Owner thirty (30) days prior to the expiration, cancellation, non-renewal, or material change in the coverage.

The Contractor shall be responsible for continuing in force completed operations, bodily injury and property damage coverage for a minimum of two (2) years after completion and acceptance of the work.

For projects with a construction cost of less than \$50,000, Builder's Risk coverage for the full project value shall be paid for and provided by the Contractor and be subject to approval by the Office of Risk Management. This coverage shall be provided by a company with an A.M. Best rating of no less than B+. The County shall be named as an additional insured.

For projects with a construction cost of more than \$50,000, the Builder's Risk coverage will be provided by the County, however, the Contractor shall be responsible for the first \$10,000 of any claim. The County's Builder's Risk coverage is \$50,000 self insured retention.

INSTRUCTIONS REGARDING INSURANCE CERTIFICATES

The Contractor and his insurance company should carefully review the insurance requirements applicable to this job. All requirements herein must be met before the County will execute the contract. In particular, we would call your attention to the following:

1. Please note that the Insurance Certificate must state that the Commercial General Liability and the Umbrella Liability Insurance Policies name **Chesterfield County** as additionally insured. This requirement may be met by placing the following language on the Certificate. Many Certificates have a space headed "**DESCRIPTION**" where the language may be inserted as follows:

Chesterfield County is additionally insured or that Chesterfield County is additionally insured with respect to General Liability; and/or Umbrella Liability policies.

2. The Insurance Certificate must also contain the required statement concerning notice of cancellation or other change in coverage. The statement used on some Certificate forms is not acceptable. The statement which is required by the contract documents reads as follows:

"Such certificate shall provide that in the event of the cancellation of the policy or policies listed on such certificate, not less than **30** days notice in writing shall be given to the County.

NOTE: **The cancellation clause in the Insurance Certificate shall be modified by striking the words 'endeavor to' in the second line and by striking the clause reading 'but failure to mail such notice shall impose no obligation or liability of any kind upon the company'."**

3. The Certificate Holder should be listed as:

Chesterfield County
c/o Purchasing Department
P. O. Box 51
Chesterfield, VA 23832-0001
IFB/RFP No. _____

4. Certificate of Insurance must have a signature.

SUPPLEMENTARY GENERAL CONDITIONS

1. QUALIFICATIONS OF BIDDERS

The Owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

2. SUBMITTALS

If requested, the Bidder shall submit the following information to the County within seven days of notification of selection for the award of a Contract for the Work:

- a. a designation of the Work to be performed by the Bidder with his own forces;
- b. the proprietary names and the suppliers of principal items or systems of materials and equipment proposed for the work;
- c. a list of names of the Subcontractors or other persons or entities proposed for the principal portions of the Work.

Prior to the award of the Contract, the County will notify the Bidder in writing if the Owner, after due investigation, has reasonable objection to any such proposed person or entity. If the Owner has reasonable objection to any such proposed person or entity, the Bidder may submit an acceptable substitute person or entity.

The Owner may, at his discretion, accept the substitution, or he may disqualify the Bidder. In the event of disqualification under this Sub-paragraph, bid security will not be forfeited.

Persons and entities proposed by the Bidder and to whom the Owner has made no reasonable objection under the provisions of Sub-paragraph (c) must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner.

3. PRE-CONSTRUCTION CONFERENCE

A pre-construction conference to include representatives of the Owner, the Engineer (if applicable), and the Contractor shall be mandatory prior to start of construction unless waived by the Owner. Pre-construction conference shall be scheduled at least three (3) days prior to start of construction.

4. SUPERVISION AND CONSTRUCTION PROCEDURES

The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor.

5. USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. The Contractor shall maintain all access roads and walks clear of debris, materials and equipment during the course of the Work. All streets, drives, walks, fences, trees, poles, antennae and the like where disturbed, removed or damaged shall be replaced, returned or repaired such that the facility and its appurtenances are left in as good condition after completion of the work as it was before operations began.

Debris shall be disposed of by the end of "every" working day and not stockpiled. Beverage cans, bottles, lunch refuse, cigarette debris, etc. will not be tolerated on the job site except by immediate and proper removal of the same on a daily basis. At the completion of the Work, the Contractor shall remove all his waste materials and rubbish from and about the Project as well as all tools, construction equipment, machinery and surplus materials.

6. MATERIALS AND WORKMANSHIP

The Contract Documents describe the character and features of the materials and workmanship required to perform the Work. The Contract Documents require first class work and materials in all particulars. It is understood that the contract includes any and all work that may be necessary to connect the work done with the adjoining work in a proper and workmanlike manner.

The Owner reserves the right to employ an independent testing laboratory to conduct tests of materials, etc. as the Owner may deem necessary to assure complete compliance with the requirements of the specifications. The Contractor shall offer full cooperation with personnel in the employ of the Owner in making these tests.

7. NO DEVIATION FROM CONTRACT DOCUMENTS BY THE CONTRACTOR

In performing the Work, the Contractor shall not deviate from the Contract Documents without the written consent of the Owner. If the Contractor does deviate from the Contract, he shall correct the error at his expense in a manner satisfactory to the Owner.

8. INTERPRETATION OF CONTRACT DOCUMENTS

In case of discrepancy between or among Contract Documents, the Owner shall make such interpretations as may be deemed necessary for the fulfillment of the intent of the Contract Documents as construed by him and his decision shall be final.

The Contractor shall verify all figures on the Plans and will be responsible for the proper coordination of all dimensions as well as the different parts of the Work.

9. OTHER PLANS AND WORKING DRAWINGS (SHOP DRAWINGS)

Such information as is necessary to give a comprehensive idea of the construction contemplated, are shown on the Plans. Contractor shall submit to the Owner for his approval such additional detailed shop or working drawings as may be required for the construction of

any part of the work. Pending the approval of such drawings, any work done or materials ordered shall be at the risk of the Contractor.

10. DISCREPANCIES

The Contractor shall immediately report to the Owner, in writing, any discrepancies found between the Contract Documents and site conditions or any inconsistencies or ambiguities in the Contract Documents. The Owner shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

11. FINAL INSPECTION

At time of final inspection, the Contractor, if requested, shall provide a knowledgeable representative to assist in the inspection of the completed installation for conformance with specifications. The Owner or Engineer shall prepare a Punch List. Any deficiencies shall be promptly and permanently corrected prior to final acceptance of the work, and shall be the full responsibility of the Contractor.

12. PAYMENT

If the Contractor performs, properly, all of the obligations of the Contract Documents, the Owner shall pay the Contractor for the performance of the Work in the manner and within the time specified in the Contract Documents.

13. MONTHLY ESTIMATES AND RETAINAGE

On the 20th day of each month, or at any other regular time agreed upon by the Owner and Contractor, the Contractor shall prepare and submit to the Owner a monthly estimate for Partial Payment. The monthly estimate shall cover items of work for which the Contractor is entitled to be paid since the last previous monthly estimate was submitted, including (1) the value of the Work done, (2) major items of equipment or materials delivered to the site of the project to be installed by the Contractor, as substantiated by submitted invoices and as approved by the inspector, and (3) materials incorporated into the Work.

The Owner shall pay to the Contractor all sums due under the monthly estimate less five percent (5%) retainage on or before the 15th day of the month following the submission of the monthly estimate, unless the Owner asserts a right to withhold some or all of the payment under the provisions of the Contract Documents.

The Contractor will be paid for materials delivered to and stored on the job site. Payment will be for actual cost of materials as evidenced by receipted invoices, less five percent (5%) retainage. The contractor shall make a separate accounting of these materials and shall submit an accounting of them, with four (4) copies, along with the monthly estimate for partial payment.

14. PARTIAL PAYMENT NO WAIVER OF RIGHTS

Partial payments made under this Contract by the Owner are not evidence of the proper performance by the Contractor either in whole or in part, and no payment made by the Owner shall be construed to be an acceptance of defective or improper work. No act of the Owner or the Engineer or the representative of either of them in superintending or directing the Work, no

failure to disapprove or reject any material used in the Work, and no extension of time for the completion of the Work shall be construed as acceptance of the Work either in whole or in part. Acceptance of the work by the Owner shall occur only upon Final Payment by the Owner.

15. TERMINATION FOR BREACH OF NON-PERFORMANCE

If the Contractor fails to perform the Work promptly and diligently, or if the Contractor breaches the Contract in any other way, the Owner may:

- a. after providing the contractor with fifteen (15) days written notice, supply any workmen, equipment or materials necessary to ensure that the Work is performed promptly and diligently. The Owner may deduct the cost of supplying additional workmen, equipment or materials from payments due to the Contractor;
- b. terminate the Contract, enter upon the premises, take possession of all equipment, materials or appurtenances, and employ any person or persons to finish the Work.

In case of termination of the Contract by the Owner pursuant to this paragraph, the Contractor shall not be entitled to receive any further payment from the Owner until Completion of the Work has occurred. After completion of the Work, the Owner shall pay to the Contractor the amount of the unpaid balance due to the contractor at the time the Contract was terminated minus the cost incurred by the Owner to complete the Work. If the cost incurred by the Owner to complete the Work exceeds the unpaid balance due to the Contractor, the contractor shall be due no money from the Owner and, instead, the Contractor shall pay to the Owner the difference between the unpaid balance due and the Owner's cost to complete the Work.

16. WAIVER OF ONE BREACH NOT WAIVER OF OTHERS

No waiver by the Owner or its agents or employees of any breach of this Contract by the Contractor shall be construed as a waiver of any other or subsequent breach of the Contract by the Contractor. All remedies provided by this Contract are cumulative, and in addition to each and every other remedy under the law.

17. CHANGE ORDERS:

Change Orders must be approved by the Owner prior to work being performed.

18. SUBSTITUTIONS

The Contractor shall be responsible for making all changes in the work necessary to adapt and accommodate any equivalent or substitute products, which are submitted and accepted in lieu of the products whose name and model numbers are specified and around which the drawings were developed. The necessary changes shall be made at the Contractor's expense. The Contractor shall submit sufficient data concerning the substitute equivalent products and resulting necessary changes to the project to the Owner documenting that the substitute product(s) can be properly integrated with the project.

BID FORM

To: **Chesterfield County**

For the Construction of: New Soccer Field #20 and Irrigation Improvements at Daniel Park at Ironbridge for the Chesterfield County Parks Department

The undersigned Bidder has carefully examined the site of work, General Terms and Conditions, Special Bid Conditions, Supplementary General Conditions, Drawings and Technical Specifications, for the construction of the above named project, and in compliance with the Advertisement dated June 16, 2004, will provide all necessary machinery, tools, apparatus, and other means of construction, and do all the work and furnish all the material called for by said Specifications, in the manner prescribed therein, and will complete the Contract within _____ consecutive calendar days.

BASIS OF AWARD:

The award of this bid will be on a Total Bid basis. The award shall be made to a single bidder.

TOTAL BID \$ _____

ADDENDUM INFORMATION (If Applicable)

Receipt of the addendum listed below is acknowledged and the proposals incorporate all requirements of this addendum:

_____	Dated _____
_____	Dated _____
_____	Dated _____

Accompanying this Bid is a Bid Bond/Certified/Cashier's Check in the amount of _____ payable to Treasurer, Chesterfield County, Virginia, which is to be forfeited to the extent necessary to make up the difference between the Bid and the second low bid, if the undersigned shall fail to execute the Contract and furnish satisfactory Performance and Labor and Material Payment Bonds under the conditions and within the time specified. If the Bid Bond or guarantee is not sufficient to make up the difference between the Bid and second low bid, together with any consequential damages, the undersigned Bidder agrees to pay the Owner any losses in excess of the bond or guarantee.

The undersigned Bidder agrees to begin the work not later than ten (10) calendar days after the date specified in the Notice to Proceed and to prosecute the work in such manner as to complete it within the time limit as set forth above.

If the bid from the lowest responsible bidder exceeds available funds, the County may negotiate with the low bidder to obtain a contract price within available funds.

CONTRACTOR REGISTRATION

If a contract for construction, removal, repair or improvement of a building or other real property is for Seventy Thousand Dollars (\$70,000) or more, or if the total value of all such contracts undertaken by a Bidder within any twelve-month period is Five Hundred Thousand Dollars (\$500,000) or more, the Bidder is required under Title 54.1, Code of Virginia (1950), as amended, to be licensed by the State Board of Contractors as a "CLASS A CONTRACTOR". If such a contract is for Seventy-five Hundred Dollars (\$7,500) or more (One Thousand Dollars [\$1,000] for electrical, plumbing and HVAC work) but less than Seventy Thousand Dollars (\$70,000), the Bidder is required to be licensed as a "CLASS B CONTRACTOR". If such a contract is for One Thousand Dollars (\$1,000) or more but less than Seventy-five Hundred Dollars (\$7,500) and is not for electrical, plumbing and HVAC work, the Bidder is required to be licensed as a "CLASS C CONTRACTOR". The Contractor license shall have the appropriate specialty classification that is predominant for the respective work. The Bidder shall indicate in the space provided whichever of the following notations is appropriate, inserting his contractor license number and specialty.

Licensed Class A Virginia Contractor No. _____

Licensed Class B Virginia Contractor No. _____

Licensed Class C Virginia Contractor No. _____

Specialty: _____

If the Bidder shall fail to provide this information on his bid or on the envelope containing the bid and shall fail to promptly provide said Contractor license number to the County in writing when requested to do so before or after the opening of Bids, he shall be deemed to be in violation of Section 54.1-1115 of the Code of Virginia (1950), as amended, and his bid will not be considered.

If a Bidder shall fail to obtain the required license prior to submission of his bid, the bid shall not be considered.

TERMS AND SIGNATURE SHEET

All bids shall be signed on the Terms and Signature Sheet in order to be considered.

If discounts for prompt payment are offered by the bidder, it is required that a minimum of twenty (20) days be allowed for payment. Discounts for prompt payment will not be considered in the evaluation of bids. Discounts for prompt payment will be shown on the purchase order/contract and taken if invoices are processed and payment made within the stipulated time frame. If discounts are not offered, payment shall be made thirty (30) days after receipt of an accurate invoice by the County. Our terms are _____

Please indicate length of time required, in calendar days, for delivery/completion/pickup after notification of award (oral or written), as this may be a factor in making award. _____

All prices shall be F.O.B.: Daniel Park at Ironbridge, Chesterfield, VA. Freight, delivery costs, and incidental charges shall be included in the bid price(s).

In compliance with this Invitation for Bid #04-3127-9000 and subject to all conditions thereof, the undersigned offers and agrees to furnish any or all items and/or services upon which prices are quoted, at the price quoted as specified.

My signature below certifies:

- I agree to abide by all conditions of this Bid and that I am authorized to sign this Bid.
- the accompanying bid is not the result of or affected by, any act of collusion with another person or company engaged in the same line of business or commerce, or any act of fraud punishable under, Chapter 12, Title 18.2, 498.4 of the *Code of Virginia*, 1950, as amended. Furthermore, I understand that fraudulent and collusive bidding is a crime under the Virginia Governmental Frauds Act, the Virginia Government Bid Rigging Act, the Virginia Anti-Trust Act, and Federal Law and can result in fines, prison sentences, and civil damage awards.
- the accompanying bid is in compliance with the *State and Local Government Conflict of Interests Act 2.2-3100*, supplemented by Article 6, 2.2-4367-69 of the *Code of Virginia*. Specifically, no county employee, county employee's partner, or any member of the county employee's immediate family holds a position with the bidder, offeror, or contractor such as an officer, director, trustee, partner or the like, or is employed in a capacity involving personal and substantial participation in the procurement transaction, or owns or controls an interest of more than five per cent.

Complete Legal Name of Firm: _____

Order From Address: _____

Remit To Address: _____

Signature: _____

Name (type/print): _____ Title: _____

Fed ID No.: _____ Phone (____) _____ Fax (____) _____

We hereby provide the following information to Chesterfield County regarding our business. We understand that it is provided for statistical purposes only and all firms submitting bids will receive equal consideration.

Minority Business Enterprise:	Yes _____	No _____
Woman-Owned Business:	Yes _____	No _____
Chesterfield Business:	Yes _____	No _____

CONTRACTOR DATA SHEET
TO BE COMPLETED AND SUBMITTED WITH BID

QUALIFICATIONS OF BIDDER: Bidders shall have the capability and capacity in all respects to fulfill the contractual requirements to the satisfaction of the County.

Indicate the length of time you have been in business as a company providing the type of commodity required for this contract.

_____ years _____ months

Provide a minimum of three (3) references which may substantiate past work performance and experience in the type of work required for this contract.

Name, Address, Phone Number and Contact Person

1.
2.
3.

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SECTION 01141 - CONSTRUCTION ACTIVITIES IN A PUBLIC PARK/SCHOOL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This Section includes requirements for temporary safety measures, traffic control measures, management of construction equipment after normal working hours, and daily scheduling of new construction.
- B. Temporary Safety Measures include, but are not limited to, the following:
 - 1. Temporary chain link fencing
 - 2. Plastic Safety Fence
 - 3. Barricade Tape
 - 4. Wooden Barricade
 - 5. Safety Personnel
- C. Traffic Control Measures include, but are not limited to, the following:
 - 1. Traffic Signs
 - 2. Traffic Cones
 - 3. Barricades
- D. Management of Construction Equipment and protection of work in place, after Normal Working Hours include, but is not limited to, the following:
 - 1. Padlocks
 - 2. Chains
 - 3. Security personnel

1.3 SUBMITTALS

- A. Company safety policy and procedures: At the pre-construction meeting, submit a copy of the company's "Safety Policy and Procedures Manual". Each employee must be required to read, understand and follow the procedures listed in the manual in order for the manual to be considered valid.

-
- B. Park Safety Management Documentation: Prior to starting construction, submit a copy of the procedures that will be used to ensure safe construction practices within the park setting specific to the scope of work. At a minimum, the document shall include the following:
1. A list of the equipment for the Temporary Safety Measures that will be used and where they will be used.
 2. A list of the Traffic Control Measures that will be used and where they will be used.
 3. Locations for storing the construction equipment after hours and stockpiling materials.
 4. A map showing how each phase or area of the construction will be segregated from the public. Multiple maps may be required depending on the complexity of the phasing.
 5. A general schedule for each phase or area of construction. The schedule is different from the schedule for the owner as it will show the order of each phase and area of construction and approximate dates. This document will be reviewed for coordination with the park schedule for upcoming events.

1.4 PROJECT CONDITIONS

- A. Upon starting construction, the contractor understands that the park remains open after normal working hours and on weekends and holidays. The contractor also understands that the construction equipment and construction site may be subject to intrusion, vandalism, and theft from minors using the park since the construction equipment and site will be left unsupervised.
1. The contractor will be responsible for repairing and replacing equipment at no cost to the owner.
 2. Neither the owner, park operator, nor the engineer will be liable for any damage caused by park patrons.
 3. If equipment is vandalized or stolen, the contractor shall contact the appropriate authorities to report the damage. The contractor may pursue, at no cost to the owner, compensation for the damages from the responsible party.
 4. If the new construction is vandalized, the contractor shall provide the repairs at no cost to the owner.
- B. The contractor shall provide Temporary Safety Measures around the areas of construction to minimize the possibility of damage to the new construction, construction equipment, and injury to park patrons.
1. If an injury to a park patron occurs as a result of the construction, either during or after normal working hours, the contractor shall be held liable.
 2. If damage to a park patron's belonging(s) occur(s) as a result of the construction, either during or after normal working hours, the contractor shall be held liable.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts. Provide a lockable gate for the fence that will safely allow the passage of construction vehicles.
- B. Plastic Safety Fence: International orange plastic safety fence with a tensile yield of 2000 lbs per 4 foot width per ASTM 638, a ultimate tensile strength of 2900 lbs per 4 foot width per ASTM 638, elongation at break greater than 1000% per ASTM 638, and chemically inert to most chemicals. The fence shall be at least 60 inches high and securely fastened to metal post imbedded 24" into the ground located at each turn and a maximum of 10 feet apart.
- C. Barricade Tape: 3 inch wide 0.11 inch thick yellow polyethylene tape with the words "CAUTION" uniformly printed throughout the tape length in 2 inch high black letters. The tape shall be smooth, uniform and free of defects and irregularities. The tape shall have a tensile strength at breaking of 4000 psi with an elongation at breaking at least 400%. The tape shall be installed 36" above the ground on wooden stakes located at each turn and a maximum of 5 feet apart.
- D. Wooden Barricade: 2 inch by 10 inch by 8 feet long wood beam painted orange with black 2 inch wide striping supported 36 inches above the ground on a base can be moved by hand. On the wood beam, a "CAUTION" or "DANGER" sign shall be securely fastened in the middle of the beam.
- E. Security Personnel: An employee of the contractor, paid as part of the construction contract, who shall remain after the construction crew leaves the area of concern and stays until the park closes. The employee shall be responsible for directing park patrons away from the construction area and equipment. Multiple security personnel may be deemed necessary and shall be provided by the contractor at no additional cost to the owner.
- F. Traffic Signs: Traffic signs shall comply with "The Manual on Uniform Traffic Control Devices" latest edition.
- G. Traffic Cones: Traffic cones shall be bright orange plastic cones at least 30 inches high and shall sufficiently flexible to not cause damage to vehicles if the cones are impacted or run over, but resilient enough to return to the original shape and remain vertical.

PART 3 – EXECUTION

3.1 CONSTRUCTION PRACTICES, GENERAL

- A. Locate Temporary Safety Measures to limit park patron access to the new construction and construction equipment.
- B. Locate Traffic Control Measures such that traffic movement throughout the park is not disturbed and so the new traffic patterns are easy to understand.
- C. At the end of each working day:
 - 1. Clean up the site removing any tools that may be lifted unaided by mechanical equipment.
 - 2. Locate the construction equipment in the area designated during the Pre-Construction meeting, lock all doors and remove any keys. Using chains and padlocks, or other locking devices, secure the steering wheels for each piece of equipment such that if the equipment is started, mobility will be limited.
 - 3. Ensure the temporary safety measures are complete before leaving the site limiting access to the new construction and excavations.

3.2 TEMPORARY MEASURES FOR OVERALL CONSTRUCTION SITE

- A. Temporary Chain Link Fencing: Locate the fence around the limits of construction for the current phase of construction providing sufficient room for working in a safe environment meeting all OSHA requirements while minimizing interference with the park operations outside of the new construction. Contact Chesterfield County Department of Parks and Recreation prior to erecting the fence to verify the location will be acceptable. If the construction area cannot be isolated, isolate the unsafe areas per the direction of Chesterfield County.
- B. Traffic Control Signs: Locate the signs up-road in all directions describing the possible dangers and traffic restrictions so a park patron may enter the construction area aware if passage through the construction area is necessary, or to avoid the construction area completely.
- C. Traffic Cones: Locate around and throughout the site as necessary to direct traffic away from unsafe areas. If roads need to be blocked off, locate the cones so a vehicle is diverted into a parking lot or another road without having to backup or turn-a-round at the cones.
- D. Wooden Barricades: Locate around and throughout the site as necessary to direct traffic away from unsafe areas. If roads need to be blocked off, locate the cones so a vehicle is

diverted into a parking lot or another road without having to backup or turn-a-round at the cones.

- E. Security Personnel: Station near the construction area and/or the equipment so the person(s) may notice someone approaching too close for safety or security reasons.

3.3 TEMPORARY FACILITIES

- A. Temporary Restroom: The Contractor shall provide at no cost to the Owner temporary restroom facilities using a port-a-john or other temporary restroom approved by the Owner and allowed per local and state regulations.
 - 1. The acceptable locations will be determined at the pre-construction meeting.
 - 2. All construction personnel shall use the temporary restroom. Permanent restrooms located throughout the park will be off limits to construction personnel.
 - 3. Any permits required shall be the responsibility of the Contractor and shall be obtained at no cost to the Owner.
 - 4. The restroom shall be maintained in a clean and presentable manner. If requested by the Owner, the Contractor shall have the temporary facility cleaned, emptied or replaced immediately at no cost to the Owner.

3.4 OPEN EXCAVATIONS

- A. Isolated Excavations: Applies when the construction area cannot be surrounded by Temporary Chain Link Fence.
 - 1. For excavations less than 12 inches deep, surround the excavation with barricade tape before leaving the site.
 - 2. For excavations less than 24 inches deep but greater than or equal to 12 inches deep, surround the excavation with plastic safety fence before leaving the site.
 - 3. For excavations 24 inches deep or greater, surround with temporary chain link fence before leaving the site.
- B. Large Excavated Areas: Applies when the construction area cannot be surrounded by Temporary Chain Link Fence.
 - 1. Surround entire excavated area with temporary chain link fence before leaving the site.

3.5 ASPHALT

- A. Schedule placing asphalt so it may be sufficiently cool before the end of the working day.
- B. Locate traffic cones or barricades at each access to the asphalt until it has hardened sufficiently to apply the striping.

3.6 PORTLAND CEMENT CONCRETE

- A. Schedule placing concrete to the early morning so it may become sufficiently hard, resistant to imprinting, before the end of the working day.
- B. Surround all fresh concrete pours with plastic safety fence for at least two days after placing the concrete to restrict pedestrian access on the new concrete.
- C. Locate traffic cones around concrete with nearby vehicle access for at least seven days after placing the concrete to restrict vehicular access on the new concrete.
- D. Starting at the end of the work day, station security personnel near the concrete until it has sufficiently hardened.

3.7 UTILITIES

- A. Do not leave utility trenches open at the end of the day. Schedule the installation so the portion of utility installed may be covered as required per the Contract Documents. The portion of the trench at the end of the utility line installed may remain open and shall be treated as an isolated excavation.
- B. Restrict access into stockpiled pipe greater than 8 inches in diameter using either plastic safety fence or temporary chain link fence. If plastic safety fence is used, secure the fence to the pipe or completely wrap the stockpile so the fence can be fastened to itself.
- C. Wrap all valves, hydrants, and other waterline appurtenances above grade or stockpiled on site with cloth or a tarp at the end of the working day.

3.8 WEEKENDS AND HOLIDAYS

- A. Secure all vehicles, construction equipment, stockpiles, and other items relating to the construction using temporary chain link fences, plastic safety fences, chains and locks. Remove all keys, including safety keys, from vehicles and equipment.
- B. Install the temporary chain link fence around the construction area and excavations ensuring the gates are adequately locked. Provide Chesterfield County Department of Parks and Recreation with a key, or combination, to the lock.
- C. Place signs and traffic cones near the construction area re-directing the traffic as necessary.

END OF SECTION 01141

SECTION 01270 – UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders stated on the Bid Form or proposed by the Contractor, who is awarded the contract, upon request by the Owner during construction, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, bonds, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included in the Notice to Bidders.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01270

SECTION 01290 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - 2. Submit the Schedule of Values to Engineer at earliest possible date but no later than seven days after the pre-construction meeting.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

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1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Engineer.
 - c. Engineer's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Unit price.
 - d. Dollar value of completed work for both the pay request month and for the total duration for each line item.
 - e. Percent of completed work for the total duration for each line item.
 - f. Dollar value of work to remain for each line item.
 - g. Total dollar value of work completed.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.
 6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 8. Change Orders: Provide separate line items for each Change Order. Each Change Order shall be listed separately.
 9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
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- a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is the 25th day of each month. The period covered by each Application for Payment starts on the day following the end of the preceding period and ends five days before the date for each progress payment.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Construction Schedule: With each application for payment, the Contractor shall submit a Revised Construction Schedule. If the construction is behind schedule, the Contractor shall also submit a letter documenting the methods that will be used to get the construction back on schedule. Application for payment will be automatically rejected if the Construction Schedule, and if necessary, the letter explaining the method to get the project back on schedule, is not included.
- F. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

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- G. Waivers of Mechanic's Lien: With the last Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. List of Contractor's principal consultants.
 8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds.
 11. Data needed to acquire Owner's insurance.
- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- J. Final Payment Application: The final application for payment cannot be executed until all Change Orders have been executed. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 PROJECT MEETINGS

- A. General: The Engineer will conduct meetings and conferences at Project site.
 - 1. Attendees: The General Contractor and any Sub-Contractor, whose presence is required, shall attend.
 - 2. Minutes: A Site Visit Report and Meeting Minutes shall be prepared by the Engineer and distributed to the General Contractor within five days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Engineer, but no later than five days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 - 1. Attendees: Authorized representatives of Owner, Engineer, and Contractor shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:

- a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. Progress cleaning.
 - p. Working hours.
- C. Progress Meetings: Progress meetings will be conducted at bi-weekly intervals. Coordinate dates of meetings with preparation of payment requests.
- 1. Attendees: In addition to representatives of Owner and Engineer, the General Contractor, each Sub-Contractor, shall be present at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01330 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting Applications for Payment.
 - 2. Division 1 Section "Project Management and Coordination" for submitting Coordination Drawings.
 - 3. Division 1 Section "Closeout Procedures" for submitting warranties and documents.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

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- B. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.
1. Initial Review: Allow ten days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Allow ten days for processing each resubmittal.
 4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- C. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 2 by 3 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Contractor.
 - d. Name and address of subcontractor.
 - e. Name and address of supplier.
 - f. Name of manufacturer.
 - g. Unique identifier, including revision number.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 - j. Other necessary identification.
- D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- E. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
- F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will discard submittals received from sources other than Contractor.
1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
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2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 3. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Submittal and transmittal distribution record.
 - i. Remarks.
 - j. Signature of transmitter.
- G. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- H. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
1. Number of Copies: Submit six copies of each submittal, unless otherwise indicated. Engineer will return four copies. Mark up and retain one returned copy as a Project Record Document.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale or if catalog cuts are used, identify the selection used for the specific project. Do not base Shop Drawings on reproductions of the Contract Documents or submit multiple options for one item.
1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Design calculations certified by a licensed professional; if custom precast structures are used.
 - d. Compliance with specified standards.

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2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 3. Number of Copies: Submit six blue- or black-line prints of each submittal. Engineer will retain two prints; remainder will be returned. Mark up and retain one returned print as a Project Record Drawing.
- C. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.
- D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- E. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."
- F. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."
- G. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Engineer will not return copies.
 2. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."
- B. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Engineers and owners, and other information specified.
- C. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

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- D. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
 - E. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. No exceptions taken.
 - 2. Make corrections noted (Resubmission not required).
 - 3. Amend and resubmit.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

- E. If after two re-submittals, corrections are still required, the Contractor shall be responsible for the additional fees necessary for subsequent revisions. The additional fee will be based on the Engineer's hourly rate established in the Engineer's Contract with the Owner.

END OF SECTION 01330

SECTION 01700 – EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Coordination of Owner-installed products.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
 - 8. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 1 Section "Submittal Procedures" for submitting surveys.
 - 3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

- A. Qualification Data: For land surveyor to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Engineers and owners, and other information specified.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in the Commonwealth of Virginia and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than five days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field

measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Engineer promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Engineer when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

3.4 FIELD ENGINEERING

- A. Identification: Contract Documents will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction.

END OF SECTION 01700

SECTION 01770 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.
- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
 - 2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 - 3. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 - 5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01770

SECTION 02230 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Protecting existing trees, shrubs, groundcovers, plants and grass to remain.
 - 2. Removing existing trees, shrubs, groundcovers, plants and grass.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Temporary erosion and sedimentation control measures.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.
 - 2. Division 2 Section "Lawns and Grasses" for finish grading including preparing and placing planting soil mixes and testing of topsoil material.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.4 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings, according to Division 1 Section "Project Record Documents," identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.

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- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to a sediment and erosion control plan, specific to the site, that complies with requirements of authorities having jurisdiction.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within fenced area.
 - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - 3. Maintain fenced area free of weeds and trash.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - 4. Use only hand methods for grubbing within tree protection zone.
 - 5. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within tree protection zones.
 - 3. Dispose of excess topsoil as specified for waste material disposal.
 - 4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.6 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 02230

SECTION 02300 – GENERAL EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for pavements, lawns and grasses.
 - 2. Subbase course for asphalt paving.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices" for unit-price rock excavation and authorized additional excavation provisions.
 - 2. Division 2 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 3. Division 2 Section "Lawns and Grasses" for finish grading, including preparing and placing topsoil and planting soil for lawns.
 - 4. Division 2 Section "Athletic Field Construction" for earthwork operations and finish grading, including preparing and placing topsoil within the athletic field.
 - 5. Division 2 Section "Athletic Field Sprigging" for athletic fields

1.3 UNIT PRICES

- A. Unit prices for earthwork are included in Division 1 Section "Unit Prices."
- B. Rock Measurement: Volume of rock actually removed, measured in original position, but not to exceed the following. Unit prices for rock excavation include replacement with approved materials.
 - 1. 12 inches below top of subgrade.

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

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1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subbase course and hot-mix asphalt paving.
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be without additional compensation.
- F. Fill: Soil materials used to raise existing grades.
- G. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by an independent geotechnical testing agency, according to ASTM D 1586.
- H. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- J. Utilities: On-site underground pipes.
- 1.5 SUBMITTALS
- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
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2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
 2. Geotechnical testing agency may determine that soils in this group may be considered satisfactory if prepared in a controlled fashion or mixed with additives.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

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- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
 - C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.
 - D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 12 inches below top of subgrade.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
 - 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. Shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
- D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
 - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.7 SUBGRADE INSPECTION

- A. Notify Geotechnical Engineer when excavations have reached required subgrade.
- B. If Geotechnical Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Geotechnical Engineer, without additional compensation.

3.8 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation with suitable soil in 8 inch lifts.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

3.9 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

- A. Place and compact backfill in excavations promptly.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- D. Backfill voids with satisfactory soil while installing and removing shoring and bracing.
- E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.12 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. Under pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 - 3. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 - 2. Pavements: Plus or minus 1/2 inch.

3.16 SUBBASE COURSES

- A. Place subbase course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course under pavements and walks as follows:

1. Place base course material over subbase course under hot-mix asphalt pavement.
2. Shape subbase course to required crown elevations and cross-slope grades.
3. Place subbase course 6 inches or less in compacted thickness in a single layer.
4. Place subbase course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
5. Compact subbase course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.17 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Geotechnical Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
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1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02301 – ATHLETIC FIELD CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for athletic turf.
- B. Related Sections include the following:
 - 1. Division 2 Section "Athletic Field Sprigging" for sprigging of athletic fields.
 - 2. Division 2 Section "General Earthwork" for excavation, filing and backfilling and rough grading.

1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Planting Soil: Native or imported topsoil manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- E. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- G. Utilities: On-site underground pipes.

1.4 SUBMITTALS

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- B. Soil-testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 1. Report suitability of topsoil for turf growth and athletic play. State recommended quantities of nitrogen, phosphorus and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Topsoil: Sandy loam suitable for turf cultivation, active sports play, pH range of 5.5 to 6, a minimum of 4 percent organic material content; free of stones $\frac{1}{4}$ inch or larger in any dimension and other extraneous materials harmful to plant growth.
 1. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.
 2. Mechanical analysis by Weights:

Sand	50% - 70%
Silt	18% - 35%
Clay	8% - 20%

2.2 INORGANIC SOIL AMENDMENTS

- A. Sand: Clean, washed, natural or manufactured, free of toxic materials.

2.3 ORGANIC TOPSOIL AMENDMENTS

- A. Compost: Well-composted, stable and weed-free organic matter, pH range of 6 to 6.5 moisture content 35 to 55 percent by weight; 100 percent passing through 1/2 inch sieve; soluble salt content not to exceed 2%; not exceeding 0.5 percent inert contaminants and free of substance toxic to plantings; EPA approved product Class "A" and as follows:
 - 1. Organic Matter Content: 10% by volume.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.4 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.5 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place top soil material in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. Scarify and recompact top 2 inches below subgrade and compact top soil at 85 percent.

3.6 MIXING

- A. Use tilling equipment to thoroughly mix soil amenities into entire depth of topsoil prior to fine grading.

3.7 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Grading: Finish subgrades to required elevations within the following tolerances:
 - 1. Plus or minus 1/2 inch.
- C. Finished Grading: Use laser grading equipment and finish the final grade to required elevations within the following tolerances.
 - 1. Plus or minus 1/4 inch.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.
- E. Survey athletic field using the same benchmark and control points established by the original survey.
 - 1. Provide drawing accurate to 1" – 10' scale.
 - 2. Include contours at one-half foot intervals.
 - 3. Include spot elevations at 30 feet on center.

3.9 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Geotechnical Engineer; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02301

SECTION 02630 - STORM DRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes gravity-flow, nonpressure storm drainage.

1.3 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Rating: 10-foot head of water. Pipe joints shall be at least silttight, unless otherwise indicated.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe, pipe fittings, and seals from dirt and damage.

PART 2 - PRODUCTS

2.1 CONCRETE PIPE AND FITTINGS

- A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76, with groove and tongue ends.
 - 1. Class III, Wall B.

2.2 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:
 - 1. Cement: ASTM C 150, Type II.
 - 2. Fine Aggregate: ASTM C 33, sand.
 - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
 - 4. Water: Potable.

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- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio.
 - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
 - 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

2.3 PIPE OUTLETS

- A. Head Walls: Cast-in-place reinforced concrete, as per Virginia Department of Transportation requirements.
- B. Riprap Basins: Broken, irregular size and shape, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 2 Section "Earthwork."

3.2 PIPING APPLICATIONS

- A. Gravity-Flow, Nonpressure Sewer Piping: Use the following pipe materials for each size:
 - 1. NPS 15: Reinforced-concrete sewer pipe and fittings.
 - 2. NPS 19 x 30: Reinforced-concrete sewer pipe and fittings.

3.3 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install gravity-flow, nonpressure drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow, as indicated.
 - 2. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

3.4 STORMWATER INLET AND OUTLET INSTALLATION

- A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.
- B. Construct riprap of broken stone, as indicated.
- C. Install outlets that spill onto grade, anchored with concrete, where indicated.
- D. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.

3.5 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318/318R.

3.6 CLEANING

- A. Clean interior of piping of dirt and superfluous materials. .

END OF SECTION 02630

SECTION 02741 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes hot-mix asphalt paving.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
- B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
- C. Material certificates.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or VDOT.
- B. Regulatory Requirements: Comply with Virginia Department of Transportation "Road and Bridge Specifications," latest edition, for asphalt paving work.
- C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:
 - 1. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag. Maximum size 1/2 inch.
- B. Fine Aggregate: AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.
- C. Mineral Filler: AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO MP 1, PG 64-22.
- B. Tack Coat: CRS-2.

2.3 AUXILIARY MATERIALS

- A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

2.4 MIXES

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by VDOT; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
 - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
 - 2. Surface Course: SM-9.5A.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Proof-roll entire track using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
- B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

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1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.
 - C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
 - D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.1 gal./sq. yd..
 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.2 HOT-MIX ASPHALT PLACING

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 1. Spread mix at minimum temperature of 250 deg F.
 2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.3 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.
 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

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- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
 - E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

3.4 INSTALLATION TOLERANCES

- A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:
 - 1. Surface Course: Plus 1/4 inch, no minus.
- B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 - 1. Surface Course: 3/16 inch.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will visually inspect asphalt placement.
- B. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.6 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 02741

SECTION 02810 - LANDSCAPE IRRIGATION

GENERAL

SCOPE

Provide all labor, equipment, materials and maintenance to fully and properly complete the work indicated on the drawings and/or specified herein. Unless specified otherwise in this section, the work includes, but is not limited to the following:

- Automatic controlled irrigation system, including piping, fittings, sprinkler heads and accessories;
- Controller and control lines and/or tubing;
- Booster pump;
- Valves and fittings;
- Trenching, backfill and reseeding to include all disturbed areas;
- Testing all systems, start-up and winterizing.

SITE LOCATIONS

The athletic fields to be irrigated are located at the following address:

R. Garland Dodd
At Point of Rocks Park
201 Enon Church Road
Chester, VA 23831

RELATED WORK BY OTHERS

Water **meter** to be provided by County.

Electric power **source** to be provided by the County.

SUBMITTALS

Submit design data and shop drawings as required.

The Owner will be the sole judge of acceptability for substitutions and no substitute will be bid, ordered, or utilized without the Owner's prior written acceptance. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute which may not carry the same guarantee as that specified.

UTILITIES

Water meter connection (meter costs by owner) and main water lines are a part of this bid. Owner to apply for new water meter. Contractor to coordinate with Utilities Department for installation and connection.

Electrical power to controller and pump is part of this bid.

TIME SCHEDULE FOR START AND INSTALLATION SCHEDULE OF WORK

Irrigation installation shall start within 15 days after receipt of Notice to Proceed and be substantially complete within 30 days.

SITE AND DRAWING EXAMINATION

Any Contractor submitting a proposal for this work shall first examine the site of the proposed work and all conditions at the site that he may fully understand any facilities, difficulties, and/or unusual requirements, for the installation of all materials and work furnished under this section.

DRAWINGS AND SPECIFICATIONS

The drawings accompanying these specifications are to be considered important and integral parts of same, and anything omitted from one and embodied in the other is to be considered as essential to the requirements of the contract and must be furnished and installed by the Contractor.

The Contractor shall fully inform himself regarding any available space limitations and/or unusual requirements for the installation of all materials and work furnished under this section.

Questions pertaining to work shall be referred to the Owner for clarification. Contact Mark Askin at (804) 751-4481, Stuart Connock, Jr., at (804) 751-4484.

PRODUCTS

All materials to be incorporated in this system shall be new and without flaws or defects, all bearing manufacturer's name, ASTM and UL designations.

- Pipe: shall be class 200 (SDR 21) solvent weld for all pipe. Three way swing joints shall be manufacturer's name, ASTM and UL designations.
- Solvent: cement shall be compatible with PVC pipe.
- Drain Valves: manual, installed with gravel sump.
- Drain Covers: shall be Ametek, Toro or approved equal.

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- Wire: control wire shall be 14/1 gauge UL/UF, direct burial red in color. Common wire shall be 14/1 gauge UL/UF, direct burial white in color.

All wire splices below grade shall be made waterproof with correctly sized wire splice connectors, made for direct burial and rated for minimum of 30 volts.

Wire shall be color-coded. White is to be used for common, red is to be used for control, blue for extra, green for stub-out and yellow for sensor. Any deviation will be replaced.

- Controllers: TORO Sentinel 12 and 48 Station Radio Controller, Model #SSAK48PS16NS4 supplied with (1) Sentinel Handheld Controller, Model #SHHR and (2) Sensors, Model #IR22QB. The County will provide and install appropriate electrical panel box and breakers and will make electrical connections. {Controller shall be mounted on concrete slab per manufacturer's specifications}.
- Central Computerized Controller Workstation: Toro, Central Computerized Controller Workstation to include all hardware, software and technical support for installation and setup to operate the Sentinel 12 and 48 Station Radio Controllers.
- Hydraulic/Electric Controller Converter: TORO Model EHC-01-16 (3 required). Delete this!!!
- Valves: Automatic remote control valves (RCV) shall be sized as specified on drawings. RCVs shall be installed per manufacturer's recommendations and shall be rated for pressure and flow as required. RCVs shall be low voltage. Valves shall be constructed of plastic. Valves shall be the P220-26-06, 1 1/2" model as manufactured by The Toro Company, Riverside, California.
- Backflow Prevention: shall be installed by others and will be RPZ type as required to meet all applicable codes or as specified on drawing.
- Sprinkler Heads: with approved rubber covers shall be Toro 640-02-41 Checkomatic, or otherwise specified on drawings.
- Booster Pump: shall be 1-1/2 HP, minimum booster pump (120/240v; single phase) or size as recommended by bidder. Pump shall be centrifugal type pump that provides 60 PSI at the head. Pump shall be model CT60-1505 as manufactured by Aermotor. Enclosure shall be approved by County.
- Quick Coupler: shall be solid brass 1" size to include swivel and key model #474-00 as manufactured by the Toro Company.
- Contractors Representative: Methods and materials used for cutting and patching shall be acceptable to the Irrigation Designer.

MATERIALS

Provide only new materials, without flaws or defects and of the highest quality of their specified class and kind to be provided by an authorized Product Distributor. Product distributors will be asked to submit their factory authorization to sell and service all components that they provide.

Comply with pipe sizes indicated. No substitution of smaller pipes of the Irrigation Designer. Larger sizes may be used subject to acceptance of the Irrigation Designer. Remove damaged and defective pipe.

Provide pipe continuously and permanently marked with manufacturer's name or trademark, size schedule and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (NSF) approval.

- Plastic Pipe, Fittings, and Connections: 2" diameter and under: SDR21, class 200, bell end PVC. PVC pipe fittings: ASTM D2241 schedule 40 PVC molded fittings suitable for solvent weld connections. Fittings made of other materials are not permitted. Saddle and cross fittings not permitted.
- Sprinkler Heads, Valves, and Associated Equipment: Provide manufacturer's data on each type of equipment to obtain Irrigation Designers approval.

OUTLETS

- Quick Coupler: Solid bronze, 1" size to include swivel and key model #474-00 as manufactured by The Toro Company, Riverside, California.
- Sprinklers: 1" threaded inlet, stainless steel riser with the ability to mount 2" below grade. Sprinklers shall discharge 11.0 GPM @ 60 PSI base pressure. Sprinklers shall be model 640-02-41 as manufactured by The Toro Company, Riverside, California.
- Sleeves: Sleeves shall be schedule 40 PVC as indicated on the plan. Any additional sleeves shall be two sizes larger than the pipe routed through them.

ACCESSORIES

- Drainage Fill: 2" washed pea gravel.
- Fill: Clean soil free of stones larger than 1" diameter foreign matter, organic material, and debris.

Provide imported fill material as required to complete the work. Obtain rights and pay all costs for imported materials.

Suitable excavated materials removed to accommodate the irrigation system work may be used as fill material subject to the Irrigation Designers review and acceptance.

- Clamps: Stainless steel, worm gear hose clamps with stainless steel screws or ear type clamps.
- Low Voltage Wire Connectors: Socket seal type wire connectors and waterproof gel sealer with wire connectors 3M DBY's and DBR's.

EXECUTION

Prior to beginning any work, Contractor shall field test water supply at top location and notify the Owner in writing, describing the pressure and flow. The Contractor shall note any problems which may affect the operation of the system as designed.

Layout work as accurately as possible to drawings. Contractor shall verify location of utilities, plant material and other fixtures. No irrigation lines shall be within 5' of any tree. The Contractor shall be responsible for full and complete coverage of all irrigated areas and shall make any necessary minor adjustments at no additional cost to the Owner.

Plastic pipe shall be delivered to the site in unbroken bundles packaged in such a manner as to provide adequate protection for the pipe ends, either threaded or plain.

EXCAVATION AND TRENCHING

Excavation and Trenching shall be completed to finish grade.

- Perform all excavation as required for the installation of the work. Restore all surfaces and underground installation damaged or cut as a result of excavations to their original compacted condition and in a manner approved by the Owner.
- Trenches shall be made of sufficient depth to provide a minimum cover of 36" over all 2" lines, and a minimum cover of 18" over all lines less than 2". The backfill shall be thoroughly compacted to 95% of theoretical maximum density in accordance with Virginia Test Method I.
- Concrete thrust blocks shall be installed at all directional changes in the pipeline. The size, shape, and mixture of the concrete thrust block shall be constructed according to pipe manufacturer's instructions and specifications.

Plastic Pipe shall be installed in a manner so as to provide for expansion and contraction.

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- Plastic pipe shall be cut with a hand saw or hack saw with the assistance of a square in sawing vice, or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
 - All plastic to plastic joints shall be solvent weld joints or slip seal joints. Only the solvent recommended by the pipe manufacturer shall be used. All plastic pipe and fittings shall be installed as outlined and instructed by the pipe manufacturer and it shall be the Contractor's responsibility to make arrangements with the pipe manufacturer for all field assistance that may be necessary. The contractor shall assume full responsibility for the correct installation.
 - The solvent weld joints shall be made in the following manner:
 - < Thoroughly clean the mating pipe and fitting with a clean dry cloth.
 - < Apply a uniform coat of solvent to the pipe and fitting with a non-synthetic bristle brush.
 - < Insert one pipe and fitting, and give a quarter turn to insure even distribution of the solvent and make sure the pipe is inserted to the full depth of the fitting socket.
 - < Hold in position for minimum 15 seconds.
 - < Wipe off excess solvent that appears at the outer shoulder of the fitting; care should be taken so as not to use an excess amount of solvent thereby causing a burr or obstruction to form on the inside of the pipe.
 - The joints shall be allowed to set at least 24 hours before pressure is applied to the system of PVC pipe.
 - All plastic to metal threaded connections shall utilize Teflon Tape as sealant material.

All control lines shall be installed in a neat and orderly fashion and may be installed either in the main and lateral trenching or in their own separate trench. The lines shall be bundled together and taped every 5'. Control line connections shall be as approved in a preceding section of these specifications. All control lines shall be separate lines from controller to head.

Install manual drain valves (enclosed in valve boxes) horizontally at low points in lines to prevent damage due to freezing, place 1 cu. ft. gravel sump at each valve. All lines to be set such that drain valves occur outside the bounds of the established regulation playing areas.

Install air compressed blow-out fitting, enclosed in valve box, at Owner approved location. Set heads flush with finish grade. Take all necessary precautions to protect turf areas: recompact and ensure protection of turf during any adjustments, replacements or other work after turf is in place.

Gate valves shall be installed at each P.O.C. where shown on drawings. Quick coupling valves to be installed where shown on drawings.

Install controllers at Owner approved locations. All controllers to be installed in Owner designated area adjacent to fields. Supply necessary materials to make electrical connections to County junction boxes.

All sprinklers shall be installed on swing joints. The sprinkler head shall be installed so that the top is slightly above the finished grade level. Backfill around the swing joint and sprinkler shall be free of large rocks, roots, or foreign debris.

Contractor shall be responsible for obtaining all required permits and inspections. Copies of approved inspections shall be forwarded to the Owner.

FLUSHING AND TESTING

After all new piping and risers are in place and connected, for a given section, and all necessary work has been completed and prior to the installation of sprinkler heads, all control valves shall be opened and a full head of water used to flush out the system. Testing of the system shall be performed after completion of each section or completion of the entire installation and any necessary repairs shall be made at the Contractor's expense, to put the system in good working order.

CLEANUP AND SUBSTANTIAL COMPLETION

Areas damaged during the progress of the work or during repairs shall be the responsibility of the Contractor to restore to a condition satisfactory to the Owner.

Upon substantial completion and reinspection of all repairs or renewals necessary, the Contractor shall notify the Owner five days in advance for an inspection.

GUARANTEE

It shall be the Contractor's responsibility to insure and guarantee complete coverage of the areas shown on the drawings to be irrigated and be responsible for any and all settlement of trenches. He shall also guarantee the satisfactory operation of the entire system and the workmanship and restoration of the area. The entire system shall be guaranteed to be complete and perfect in every detail for a period of one (1) year from the date of its acceptance and he HEREBY AGREES to repair or replace any such defects occurring within that year, free of expense to the Owner.

The Contractor shall be required to perform two (2) start-ups and check-outs of the irrigation system and two (2) complete drainages of the system at the request of the Owner to train the Owner's Maintenance Staff. These operations shall include: (1) drain down and start up after (2) weeks operation, and the first season's fall drainage and spring start-up.

LAYOUT DRAWINGS AND EQUIPMENT LISTINGS

Approximate field sizes, water service locations and controller locations are shown on the following drawings. The pattern for installation of irrigation heads is shown and should be located on existing field layout as dimensioned on the drawings.

Controller and pump location shall be determined prior to commencement of work, approximate location is shown on the drawings.

END OF SECTION 02810

SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Seeding.
 - 2. Sodding.
- B. Related Sections include the following:
 - 1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

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- C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.
 - D. Material Test Reports: For existing surface soil and imported topsoil.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 - 1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

1.7 SCHEDULING

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Spring Planting: March to May.
 - 2. Fall Planting: September to October.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 LAWN MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

1. Seeded Lawns: 60 days from date of Substantial Completion.
 - a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
- B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
 1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.
- C. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 1. Mow grass 1 to 2 inches high.
- D. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 1. Full Sun: Bermudagrass (*Cynodon dactylon*).
 2. Full Sun: Kentucky bluegrass (*Poa pratensis*), a minimum of three cultivars.
 3. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).

4. Shade: Proportioned by weight as follows:

- a. 50 percent chewings red fescue (*Festuca rubra* variety).
- b. 35 percent rough bluegrass (*Poa trivialis*).
- c. 15 percent redtop (*Agrostis alba*).

2.2 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site, in location specified. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient and in location specified. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

2.3 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

1. Provide lime in form of dolomitic limestone.

2.4 PLANTING ACCESSORIES

- A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.5 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2.6 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.7 PLANTING SOIL MIX

- A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers in the following quantities:
 - 1. Weight of Lime per 1000 Sq. Ft.:
 - 2. Weight of Commercial Fertilizer per 1000 Sq. Ft.:

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding overspray.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

- A. Limit lawn subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply fertilizer directly to subgrade before loosening.
 - 2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

-
- a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.
- D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- E. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
- 1. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Sow seed at the rate of 5 to 8 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.
- D. Protect seeded areas with straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
- 1. Anchor straw mulch by crimping into topsoil with suitable mechanical equipment.
 - 2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft.. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.5 SATISFACTORY LAWNS

- A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
- B. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.6 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.
- C. Remove erosion-control measures after grass establishment period.

END OF SECTION 02920

SECTION 02921 – ATHLETIC FIELD SPRIGGING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Sprigging.
- B. Related Sections include the following:
 - 1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Division 2 Section "General Earthwork" for excavation, filling and backfilling, and rough grading.
 - 3. Division 2 Section "Athletic Field Construction" for earthwork operations and finish grading, including preparing and placing topsoil within the athletic field.

1.3 SUBMITTALS

- A. Bermuda Sprigs: Submit certifications from Grower for type and age of sprigs.
- B. Maintenance Instructions: The Owner will submit a maintenance schedule to the Contractor based on the time of year for approval by the Grower.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

1.5 SCHEDULING

- A. Planting Restrictions: Plant during the following period.
 - 1. May 15 – July 15.

-
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

PART 2 - PRODUCTS

2.1 SPRIGS

- A. Sprigs:
 - 1. Turfgrass Species: Cold-tolerant coarse leaf, Bermudagrass for Central Virginia.

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: Class T, with a minimum 99 percent passing through No. 8 sieve and a minimum 75 percent passing through No. 60 sieve.

2.3 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade starter fertilizer of neutral character, phosphorous as the main nutrient at 1-2 lbs. per 1000 sf.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive athletic turf for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected and Owner has approved the soil conditions.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 SPRIGGING

- A. Plant freshly shredded sod sprigs in furrows 1 to 1-1/2 inches deep. Place individual sprigs in moistened soil, 6 inches apart in rows 10 inches apart, and fill furrows without covering growing tips. Lightly roll and firm soil around sprigs after planting at a rate of 700 bushes per acre.
- B. Broadcast sprigs uniformly over prepared surface at a rate of 700 bushes per acre and mechanically force sprigs into lightly moistened soil.
 - 1. Spread a 1/4-inch- thick layer of topsoil on sprigs.
 - 2. Lightly roll and firm soil around sprigs after planting.
 - 3. Watering will be performed by the Owner.

3.4 SATISFACTORY SPRIG PRODUCT

- A. Satisfactory Sprig Product: After 30 days, the required number of sprigs has been established as well-rooted, viable plants.
- B. Re-supply turf grass sprigs that do not comply with requirements as directed by the Owner.

3.5 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.
- C. Remove erosion-control measures after grass establishment period.

END OF SECTION 02921

IRONBRIDGE PARK SOCCER FIELD #20



GENERAL NOTES

- OWNER/DEVELOPER: CHESTERFIELD COUNTY
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 40
CHESTERFIELD, VA 23832
STUART W. CONNOCK, JR.
(804) 751-4484 FAX (804) 751-4486
- CONSULTING CIVIL ENGINEER: HANKINS & ANDERSON, INC.
4880 SADLER ROAD SUITE 300
GLEN ALLEN, VIRGINIA 23060
WILLIAM C. WHEELER
(804) 285-4171, FAX (804) 217-8520
- GPIN NUMBER: 7706699700
- ZONING: A CASE 98 SN 0221
- MAGISTERIAL DISTRICT: DALE
- DEVELOPING DISTRICT: EMERGING GROWTH
- TOTAL SITE AREA: 191.77 AC.
- EXISTING/PROPOSED USE: NEW SOCCER FIELD AT AN EXISTING PARK
- WATER: COUNTY WATER
- SEWER: NONE
- DISTURBED AREA BY THIS PROJECT: 4.9 AC
- PARKING SPACES REQUIRED: 4 SP/ TENNIS & BB COURT • 7 COURT • 12 SP/VB COURT • 1 COURT
• 50 SP/BALLFIELD • 20 FIELD • 1,040 SPACES
- PARKING SPACES PROVIDED: 1,124 SPACES (PARK ONLY)
- LANDSCAPING REQUIRED: VERIFICATION BY PLANNING OF EXISTING TREE BUFFER
- LANDSCAPING PROVIDED: UPON REVIEW OF PLANNING DEPARTMENT

LAND DISTURBANCE PERMIT PROCEDURES

LISTED BELOW, ARE THE PROCEDURES FOR SUBMITTING A LAND DISTURBANCE PERMIT APPLICATION. THE ITEMS ARE LISTED IN PRIORITY ORDER. THESE STEPS MUST BE COMPLETED BEFORE THERE IS ANY LAND CLEARING. ITEMS 1 & 2 MUST BE COMPLETED PRIOR TO PERMIT APPLICATION PROCESSING. PERMIT APPLICATION PROCESSING IS NOT A "WALK-THRU" PROCESS.

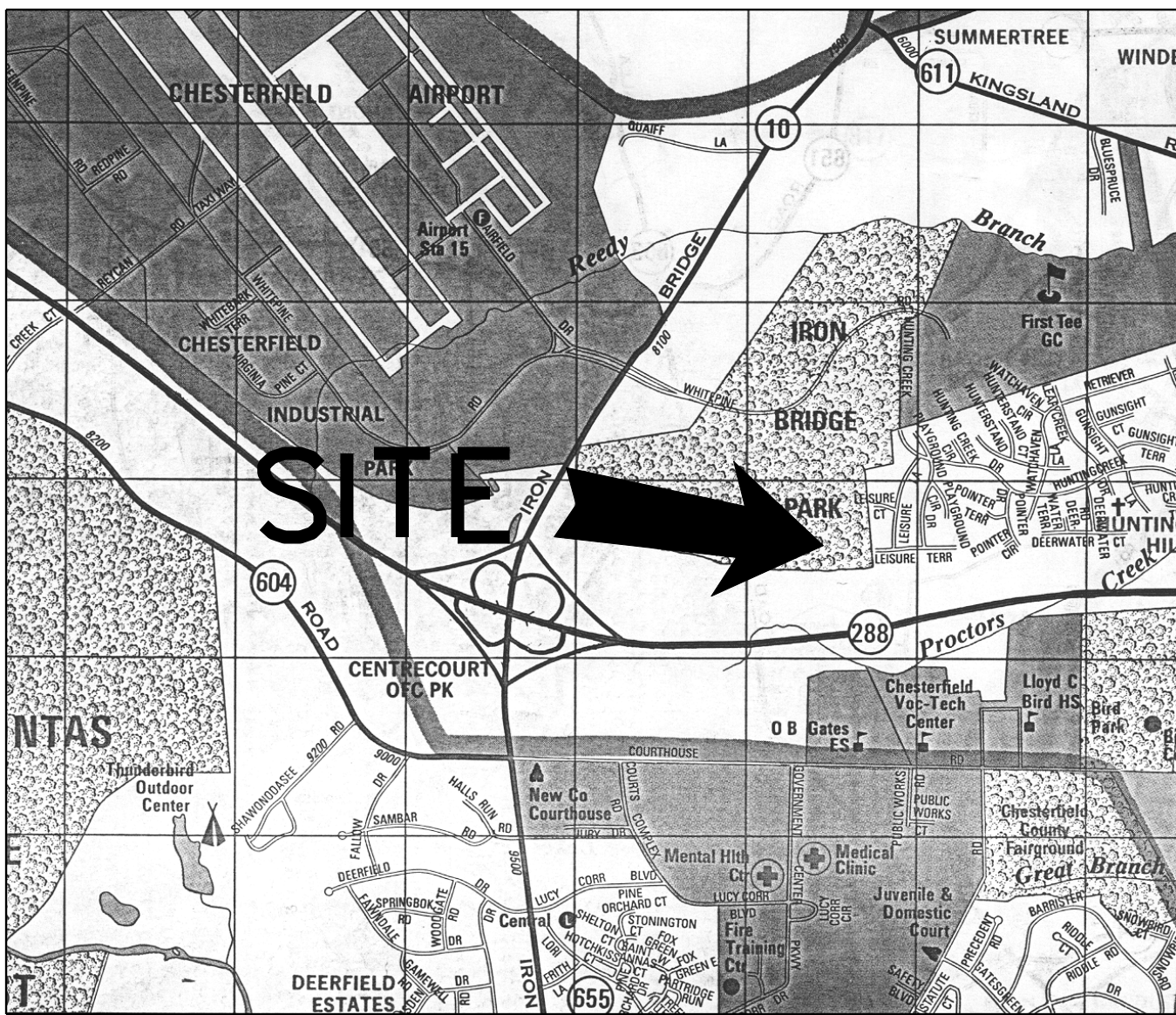
- SUBMIT A PROGRAM ADMINISTRATION FEE (REVIEW FEE).
-\$100.00 FOR LESS THAN 10,000 SQ. FT. OF DISTURBED LAND, COMMERCIAL.
-\$860.00 FOR 10,000 SQ. FT. OR GREATER OF DISTURBED LAND PLUS AN ADDITIONAL \$60.00 PER DISTURBED ACRE, COMMERCIAL.
- SUBMISSION OF PLANS.
- APPROVAL OF SITE PLANS/SUBDIVISION ROAD AND DRAINAGE PLANS.
- ALL SITE PLANS REQUIRE AN APPROVAL LETTER FROM THE PLANNING DEPARTMENT.
- THE DEPARTMENT OF ENVIRONMENTAL ENGINEERING REQUIRES SUBMISSION OF THREE (3) EXTRA COPIES OF PLANS TO BE STAMPED AND APPROVED BY THE REVIEW ENGINEER. ONCE PLANS ARE APPROVED, ONE COPY EACH OF THE APPROVED PLANS SHALL BE DELIVERED TO THE OWNER AND EROSION CONTROL CONTRACTOR.
- OWNER SHALL SUBMIT A LAND DISTURBANCE PERMIT APPLICATION TO THE DEPT. OF ENVIRONMENTAL ENGINEERING. THE CONTRACTOR SPECIFIED ON THE APPLICATION IS THE EROSION CONTROL CONTRACTOR.
- ONCE THE PERMIT APPLICATION HAS BEEN PROCESSED, THE OWNER SHALL SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING BETWEEN THE EROSION CONTROL CONTRACTOR, OWNER, AND THE APPROPRIATE ENGINEERING DEPARTMENT INSPECTOR.
- AFTER THE PRE-CONSTRUCTION MEETING, THE INSPECTOR WILL ISSUE A LAND DISTURBANCE PERMIT TO BE POSTED AT THE SITE. LAND DISTURBANCE, IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN/NARRATIVE, MAY IMMEDIATELY COMMENCE.

CHESTERFIELD COUNTY, VIRGINIA PREPARED BY:



Hankins and Anderson
Consulting Engineers

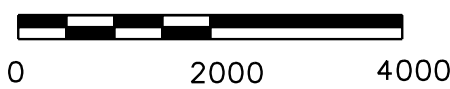
4880 Sadler Road Glen Allen, Virginia 23060
(804) 285 4171 (804) 217 8520 Fax
www.haengineers.com



VICINITY MAP

SCALE 1"=2000'

GRAPHIC SCALE: 1"=2000'



INDEX OF DRAWINGS

SHEET NO	DESCRIPTION
T1	TITLE SHEET
OV-1	OVERALL MAP OF PARK
C100	SITE PLAN
C200	NOTES AND SECTIONS
C300	EROSION AND SEDIMENT CONTROL PLAN
C301	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
C400	DRAINAGE AREA MAP
IRRIGATION PLANS	
1 OF 2	IRRIGATION LAYOUTS
2 OF 2	IRRIGATION LAYOUTS

CHESAPEAKE BAY ACT COMPLIANCE

THE TOTAL IMPERVIOUS AREA PRIOR TO AND POST CONSTRUCTION IN THE PARK IS 12.1%, WHICH IS LESS THAN THE CPA 16% CUTOFF FOR REQUIRING BEST MANAGEMENT WATER QUALITY PRACTICES.

COUNTY NOTES

APPLICANTS NAME _____

ZONING AND CASE _____

NUMBER OF LOTS _____

TAX MAP NUMBER _____

DATE OF PLANNING COMMISSION APPROVAL _____

INSPECTOR _____

CONTRACTOR _____

FOREMAN _____

NOTICE TO PROCEED _____

DATE STARTED _____

DATE COMPLETED _____

EROSION CONTROL _____


SEWER _____

WATER _____

ROADS & DRAINAGE _____

VDOT _____

SHD _____ SWCB _____


 Hankins and Anderson Consulting Engineers 4880 Sadler Road Glen Allen, Virginia 23060 (804) 285 4171 (804) 217 8520 Fax www.haengineers.com	
FOR BIDDING ONLY - NOT FOR CONSTRUCTION	
DESCRIPTION	DATE
1 1-07-04 PER COUNTY COMMENTS	1 1-07-04
2 2-19-04 PER OWNER MODIFICATIONS	2 2-19-04
PROJECT TITLE IRONBRIDGE PARK SOCCER FIELD #20	
SHEET TITLE TITLE SHEET	
DATE 10-27-03	
H&A PROJECT NO. 3979-10	
CLIENT PROJECT NO.	
SCALE AS SHOWN	
DRAWN BY GAV	
CHECKED BY WCW	
APPROVED BY BAL	
SHEET NUMBER T-1	

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION. THE ADJACENT PROPERTY INFORMATION SHOWN IS FROM THE CHESTERFIELD COUNTY ZONING MAP AND NEITHER CHESTERFIELD COUNTY NOR HANKINS AND ANDERSON WARRANTS THE ACCURACY OR CORRECTNESS OF THE INFORMATION PROVIDED. THE SUBJECT PROPERTY BOUNDARY WAS COMPILED FROM MULTIPLE SOURCES OF PROPERTY INFORMATION SUPPLIED BY THE OWNER WITHOUT THE BENEFIT OF A COMPLETED BOUNDARY SURVEY.

EXISTING IMPERVIOUS AREA	23.13	AC
EXISTING PROPERTY AREA	191.77	AC
PERCENT IMPERVIOUS AREA	12.1%	
PROPOSED IMPERVIOUS AREA	23.14	AC
PROPOSED PROPERTY AREA	191.77	AC
PERCENT IMPERVIOUS AREA	12.1%	

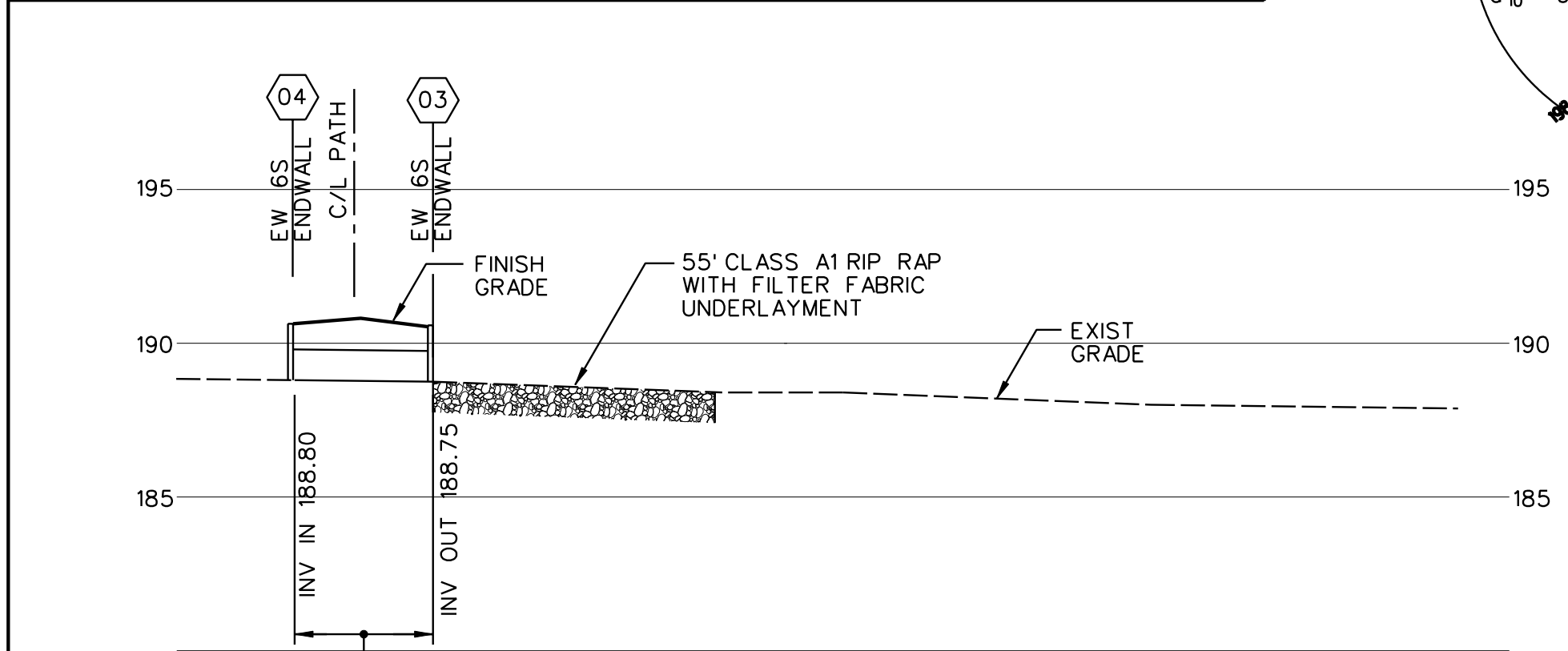
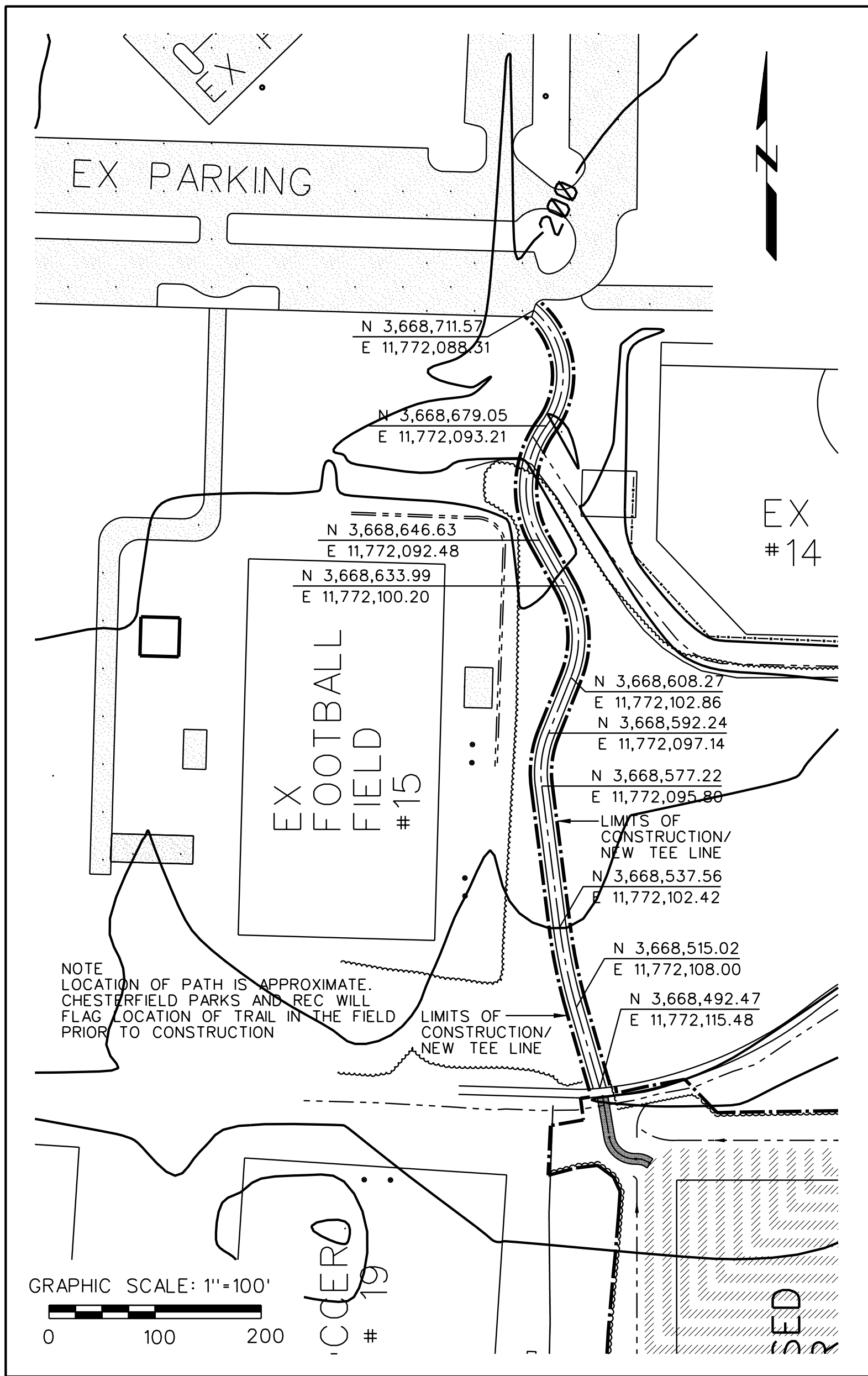
1. OWNER/DEVELOPER: CHESTERFIELD COUNTY
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 40
CHESTERFIELD, VA 23832
STUART W. CONNOCK, JR.
(804) 751-4484 FAX (804) 751-4486
2. CONSULTING CIVIL ENGINEER: HANKINS & ANDERSON, INC.
4880 SADLER ROAD, SUITE 300
GLEN ALLEN, VIRGINIA 23060
WILLIAM C. WHEELER
(804) 285-4171, FAX (804) 217-8520
3. GPIN NUMBER: 7706699700
4. ZONING: A CASE 98SN0221
5. MAGISTRAL DISTRICT: DALE
6. DEVELOPING DISTRICT: EMERGING GROWTH
7. TOTAL SITE AREA: 191.77 AC.
8. EXISTING/PROPOSED USE: NEW SOCCER FIELD AT AN EXIST PARK
9. WATER: COUNTY WATER
10. SEWER: NONE
11. DISTURBED AREA BY THIS PROJECT: 4.9 AC
12. PARKING SPACES REQUIRED: 4 SP/TENNIS & BB COURT X 7 COURTS •
12 SP/VB COURT X 1 COURT
13. • 50 SP/BALLFIELD X 20 FIELDS • 1040 SPACES
14. • 1,124 SPACES (PLANNING)
15. LANDSCAPING REQUIRED: VERIFICATION BY PLANNING OF EXISTING TREE BUFFER
LANDSCAPING PROVIDED: UPON REVIEW OF PLANNING DEPARTMENT

GRAPHIC SCALE: 1"=250'

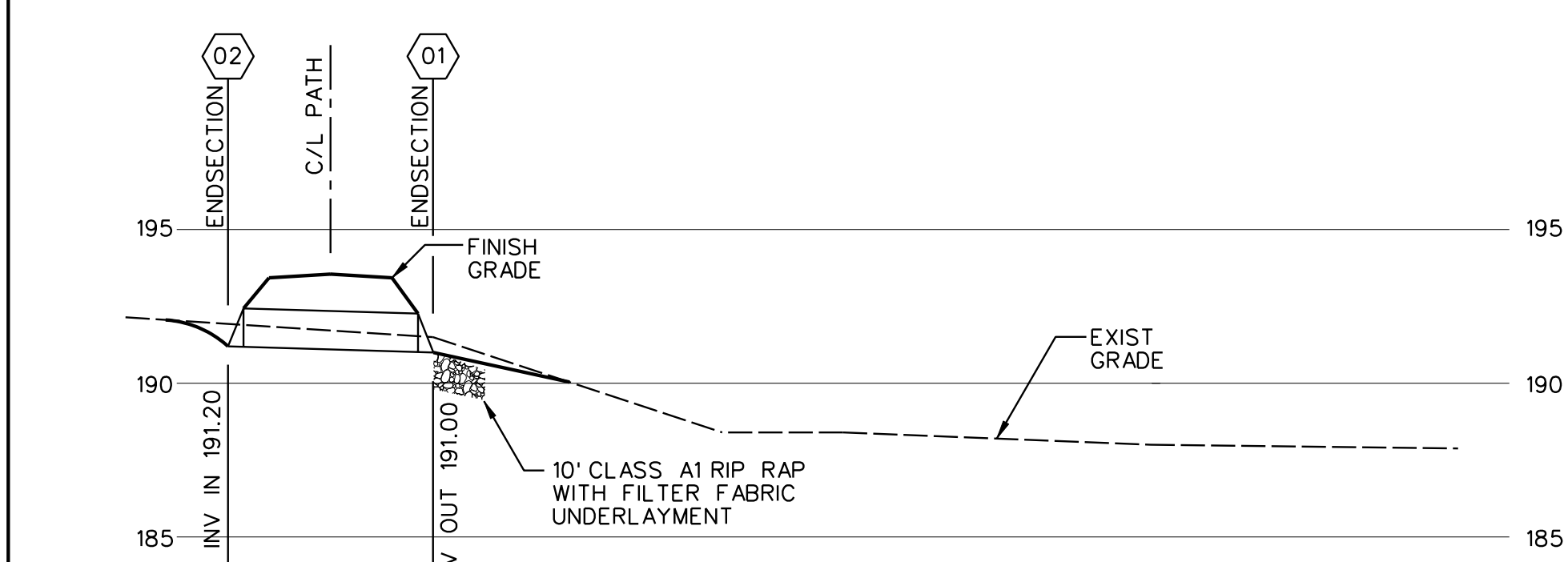


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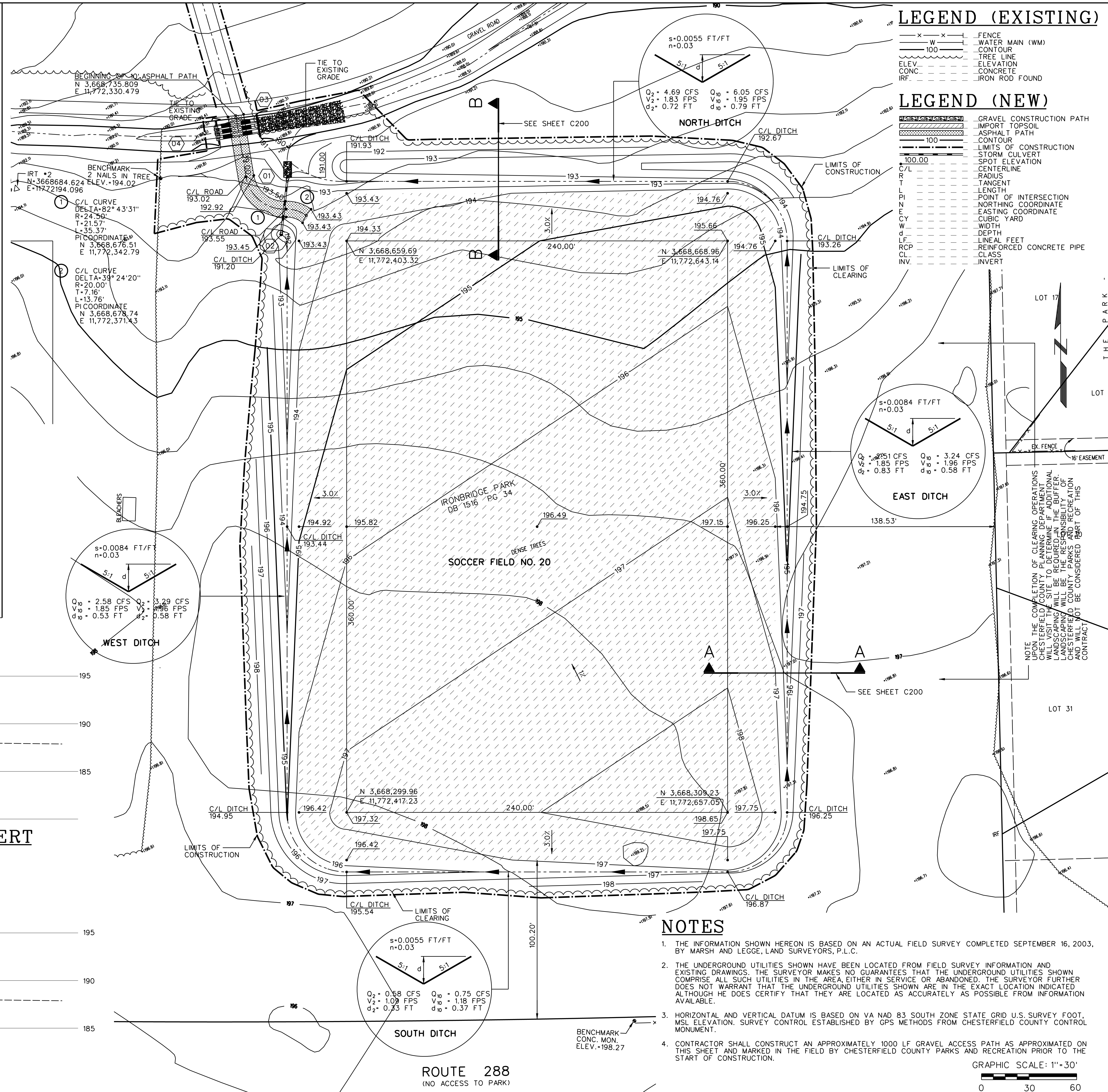
1	773669285500000 NAUGHTON, SUSAN E ZONED R-9	8	773669240300000 MATTHEWS, REBA C ZONED R-9	15	772668857200000 CASTRO, JOHN ZONED R-9	22	773669766300000 RODRIGUEZ-SEGOWIA MIGUEL A ZONED R-7	29	774669419500000 LITTLE, STEVEN S & MARY M ZONED R-7	36	775670091900000 RIZZI, VICTOR V ZONED R-7	43	776670593800000 NEELY, RONALD B & DONNA H ZONED R-7	50	776670155800000 MORRISON, DAVID J & BARBARA P ZONED R-7	57	776670627600000 BRAYANT, EVELYN C ZONED R-7
2	773669284700000 HARVEY, PHILIP L ZONED R-9	9	773668219600000 HOLDEN, MARY H ZONED R-9	16	772668846300000 HILL, CYNTHIA G ZONED R-9	23	773669817100000 WALLS, DENISE P ZONED R-7	30	774669509500000 WALTER, ANTHONY W & SALLIE M ZONED R-7	37	775670162200000 JAMES, ROBERT M JR ZONED R-7	44	775670664000000 WATSON, ROBERT M JR ZONED R-7	51	776670216000000 THOMAS, JULIAN A & JUDITH S ZONED R-7	58	776670697800000 CRAZE, TINA L ZONED R-7
3	773669304000000 ASHE, BEVERLY G ZONED R-9	10	773668089300000 HARRIS, ROBERT L JR & M H ZONED R-9	17	772668884600000 DALTON, ROBERT LEE & CINDY M ZONED R-9	24	773669887400000 BRIGHTLY, JAMES H JR & LYNDA W ZONED R-9	31	774670600200000 SAREK, ANGELA T ZONED R-7	38	775670242400000 FRICKE, ROBERT D SR & JUANITA J ZONED R-7	45	775670734300000 ALDI, FRANK E JR ZONED R-7	52	776670286300000 CONSTANT, MICHAEL ZONED R-7	59	776670768100000 GUITTAR, STEVEN L ZONED R-7
4	773669315300000 WATSON, RONALD LEWIS JR ZONED R-9	11	773668019100000 SPRAKER, RICHARD T & J M ZONED R-9	18	772668873700000 MOON, JERILYNNE K ZONED R-9	25	774669068000000 KING, GORDON M III & SUSAN W ZONED R-7	32	774670680500000 MARSHALL, CHRISTOPHER L & R L ZONED R-7	39	775670302700000 QUARLES, DORITHA A ZONED R-7	46	775670794500000 MILLER, NORMAN O & CYNTHIA K ZONED R-7	53	776670356500000 GENTRY, ROBIN R ZONED R-7	60	776670848300000 DOSTALL, BILLY R & HALL R A ZONED R-7
5	773669292600000 JONES, LOUIS R JR ZONED R-9	12	772668392600000 MARABLE MICHAEL W & CHERLYNNE ZONED R-9	19	772668902600000 LANGFORD, NORMAN L & CHERYL A ZONED R-9	26	774669148400000 HARRIS JOHN R ZONED R-9	33	774670746090000 SMITH, RONALD D ZONED R-7	40	775670829000000 SPOUSE, WINNIE S ZONED R-7	47	775670874900000 PARKER, IRA B & SHERRY M ZONED R-7	54	776670426800000 CREED, DAVID LEE ZONED R-7	61	776670928700000 VALLADARES EMETERIO & B K ZONED R-7
6	773669271800000 FLORES, MANUEL III ET AL ZONED R-9	13	772668878600000 CONNER, GINA F ZONED R-9	20	773669516100000 TOLBERT, JOSEPH F & PAMELA H ZONED R-9	27	774669228500000 SULLIVAN, PAUL N & TRACY L ZONED R-7	34	774670891200000 LANTZ, REGINALD S ZONED R-7	41	775670453200000 RAMNARIAN, A K & VEENA ZONED R-7	48	776670005300000 WAMPLER, REVA R ZONED R-7	55	776670497100000 UPDIKE, LORETTA H ZONED R-7	62	777670019000000 REYNOLDS, STUART N & LORETTA J ZONED R-7
7	773669261000000 ROTHWELL, CHRISTOPHER D ZONED R-9	14	772668858000000 CHAPMAN, THOMAS J ZONED R-9	21	772668858000000 MCKINNEY, ROGER D & CONNIE P ZONED R-7	28	774669339000000 CRUMP, LINWOOD D & PAMELIA P ZONED R-7	35	775670021700000 BARKER, LISA M ZONED R-7	42	775670523500000 FRY, PEGGY A ZONED R-7	49	775670085600000 WINTERS, KELDA Q ZONED R-7	56	776670557300000 GLENN, DONNA L ZONED R-7		



PROFILE - 19"x30" CULVERT
SCALE: HORIZ. 1"=30'
VERT. 1"=5'

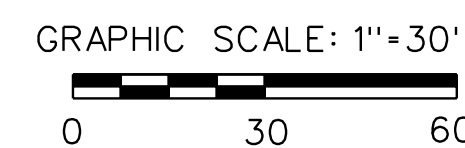


PROFILE - 15" CULVERT
SCALE: HORIZ. 1"=30'
VERT. 1"=5'



NOTES

1. THE INFORMATION SHOWN HEREON IS BASED ON AN ACTUAL FIELD SURVEY COMPLETED SEPTEMBER 16, 2003, BY MARSH AND LEGGE, LAND SURVEYORS, P.L.C.
2. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.
3. HORIZONTAL AND VERTICAL DATUM IS BASED ON VA NAD 83 SOUTH ZONE STATE GRID U.S. SURVEY FOOT, MSL ELEVATION. SURVEY CONTROL ESTABLISHED BY GPS METHODS FROM CHESTERFIELD COUNTY CONTROL MONUMENT.
4. CONTRACTOR SHALL CONSTRUCT AN APPROXIMATELY 1000 LF GRAVEL ACCESS PATH AS APPROXIMATED ON THIS SHEET AND MARKED IN THE FIELD BY CHESTERFIELD COUNTY PARKS AND RECREATION PRIOR TO THE START OF CONSTRUCTION.



LEGEND (EXISTING)

- FENCE
- WATER MAIN (WM)
- CONTOUR
- TREE LINE
- ELEVATION
- CONC.
- CONCRETE
- IRON ROD FOUND

LEGEND (NEW)

- GRAVEL CONSTRUCTION PATH
- IMPORT TOPSOIL
- ASPHALT PATH
- CONTOUR
- LIMITS OF CONSTRUCTION
- STORM CULVERT
- SPOT ELEVATION
- CENTERLINE
- RADIUS
- TANGENT
- LENGTH
- POINT OF INTERSECTION
- NORTHING COORDINATE
- EASTING COORDINATE
- CUBIC YARD
- WIDTH
- DEPTH
- LINEAL FEET
- REINFORCED CONCRETE PIPE
- CLASS
- INVERT

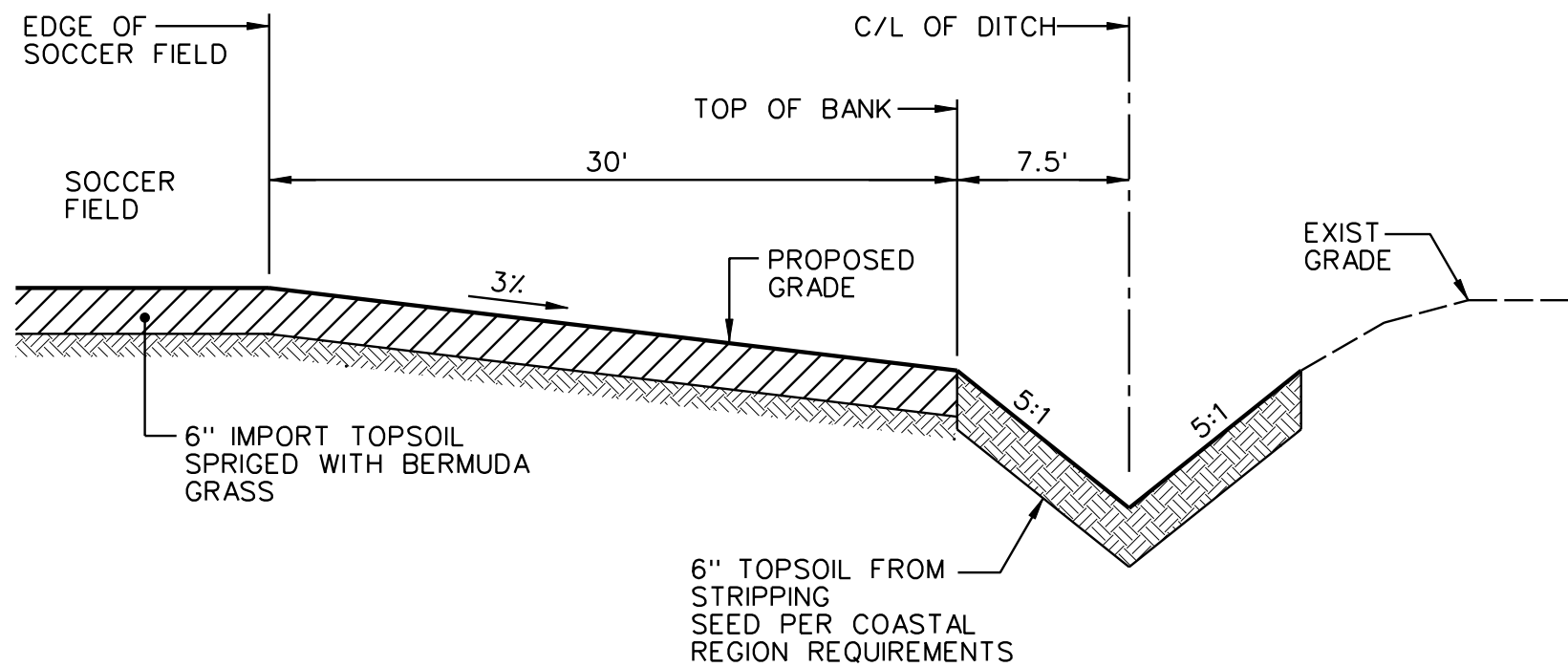
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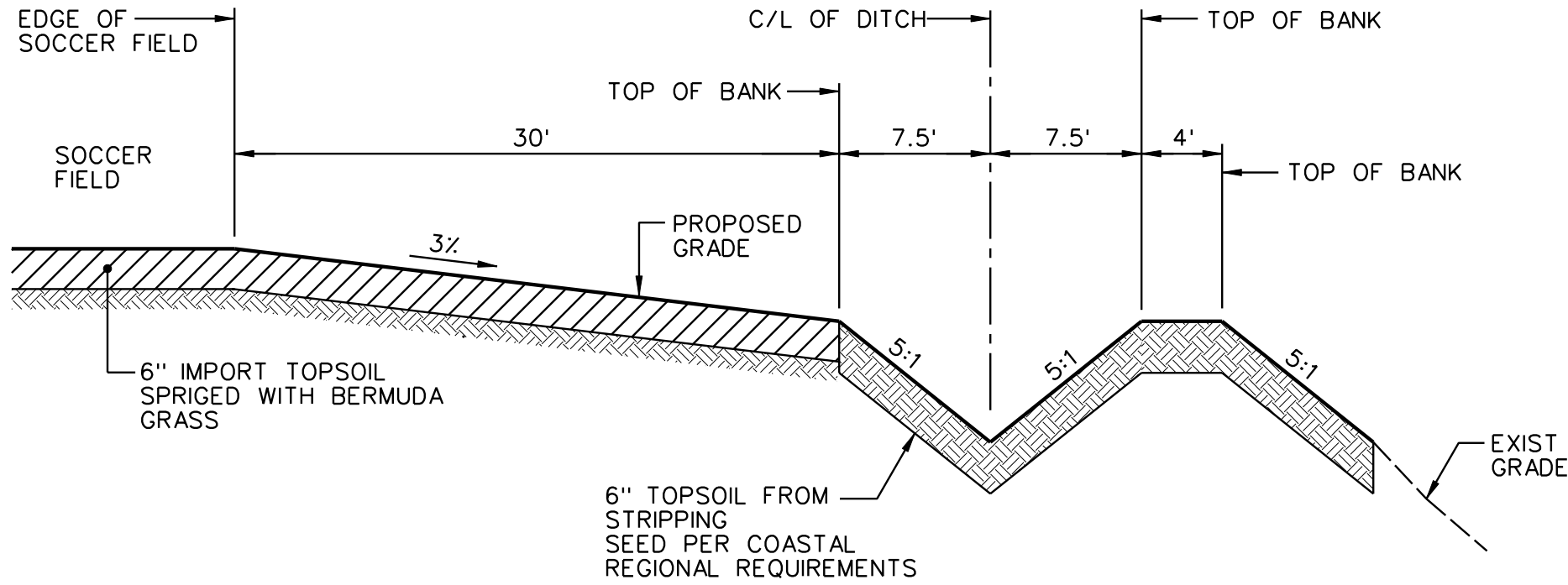
REV	DATE	DESCRIPTION
1	1-07-04	PER COUNTY COMMENTS
2	2-19-04	PER OWNER MODIFICATIONS

IRONBRIDGE PARK
SOCCER FIELD #20
SITE PLAN

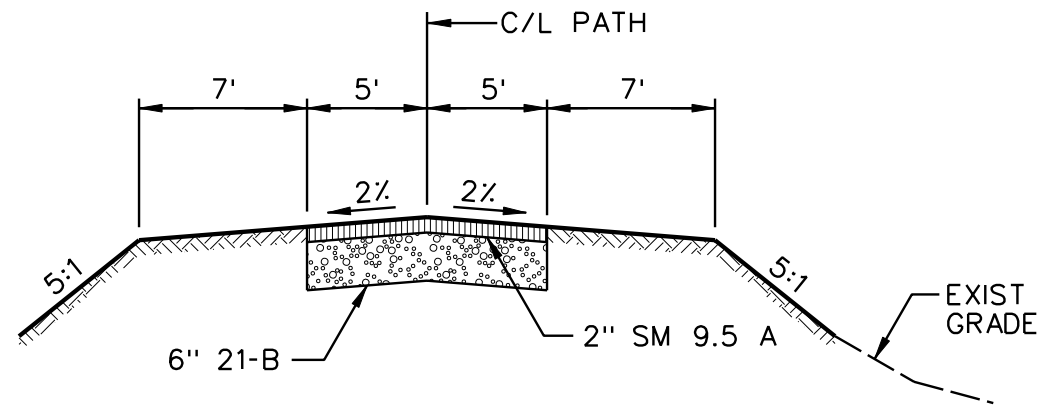
PROJECT TITLE	DATE
IRONBRIDGE PARK SOCCER FIELD #20	10-27-03
SHEET TITLE	H&A PROJECT NO.
SITE PLAN	3979-10
	CLIENT PROJECT NO.
	SCALE
	AS NOTED
	DRAWN BY
	GAV
	CHECKED BY
	WCW
	APPROVED BY
	BAL
	SHEET NUMBER
	C100



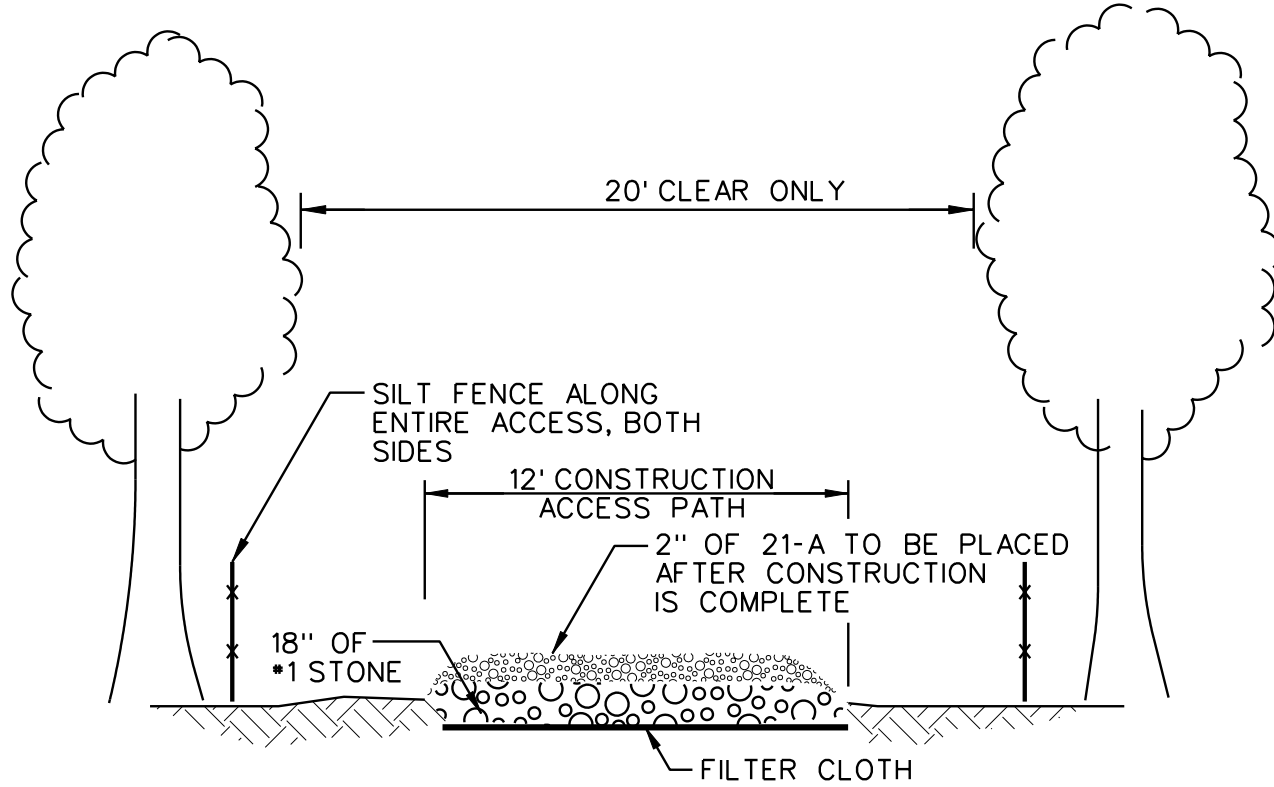
SECTION A-A
TYPICAL GRADE AROUND FIELD
NO SCALE



SECTION B-B
TYPICAL GRADE ALONG
NORTHERN EDGE OF FIELD
NO SCALE



TYPICAL SECTION THROUGH
10' ASPHALT PATH
NO SCALE



TYPICAL SECTION THROUGH
CONSTRUCTION ACCESS PATH
NO SCALE
NOTE: SEE CONSTRUCTION ENTRANCE DETAIL FOR FURTHER INFORMATION

GENERAL NOTES:

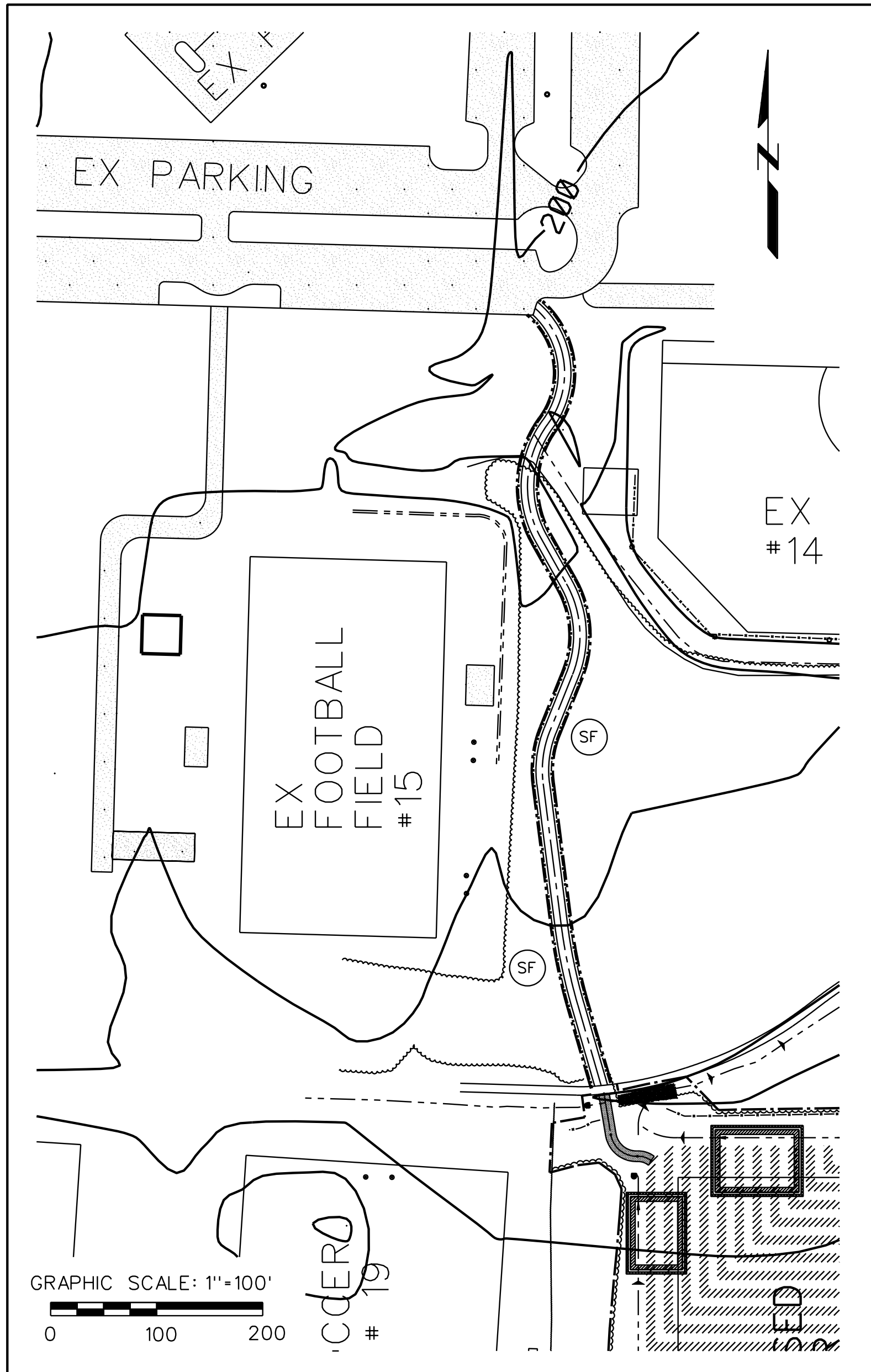
1. CONTOUR INTERVAL: ONE FOOT
2. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THIS PROJECT FROM THE COMMONWEALTH OF VIRGINIA AND CHESTERFIELD COUNTY, WITH THE EXCEPTION OF THE LAND DISTURBANCE PERMIT. PERMITS THAT WILL BE THE CONTRACTOR'S RESPONSIBILITY INCLUDE, BUT ARE NOT LIMITED TO THE VPDES PERMIT AND VDOT PERMITS.
3. ANY PERMITS WHICH MUST BE OBTAINED SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND AT HIS EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
4. THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
5. LOCATION OF EXISTING SEWER, WATER OR GAS LINES, CONDUITS OR OTHER STRUCTURE ACROSS, UNDERNEATH, OR OTHERWISE ALONG THE LINE OF PROPOSED WORK ARE NOT NECESSARILY SHOWN ON THE PLANS, AND IF SHOWN ARE ONLY APPROXIMATELY CORRECT. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON THE PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT ENGINEER IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLANS, IF THERE APPEARS TO BE A CONFLICT OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THE PLANS. FOR ASSISTANCE IN LOCATING EXISTING UTILITIES CALL "MISS UTILITY", 1-800-552-7001.
6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION, EXCEPT WHERE CHESTERFIELD COUNTY STANDARDS ARE APPLICABLE.
7. THE OWNER SHALL BE RESPONSIBLE FOR THE VERIFICATION OF 95% COMPACTION WITHIN THE PATH AREAS SUBGRADE BY AN INDEPENDENT SOILS TESTING LABORATORY.
8. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS PRESENT STATE. IF THE MATERIAL, AFTER REWORKING, REMAINS UNSUITABLE, THEN THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACE WITH APPROVED MATERIAL. ANY SOFT MATERIAL SHALL BE REWORKED OR REPLACED.
9. DAMAGE TO UTILITIES (INCLUDING UNDERGROUND) OR PROPERTY OF OTHERS BY CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS BY CONTRACTOR AT NO COST TO OWNER.
10. EXISTING PAVEMENT AND OTHER SURFACES DISTURBED BY CONTRACTOR (WHICH ARE NOT TO BE REMOVED) SHALL BE REPAIRED TO LIKE-NEW CONDITION.
11. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL DITCHES AND PIPES TO A CONDITION ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURES IN OPERABLE CONDITION.
12. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.
13. ANY SIGN IN EXCESS OF EIGHT (8) SQUARE FEET REQUIRES A PERMIT. PERMIT MUST BE OBTAINED THROUGH BUILDING INSPECTION DEPARTMENT. SIGNAGE CONTINGENT UPON APPROVAL THROUGH SIGN PERMIT REVIEW PROCESS.
14. ALL PROPOSED UTILITIES ARE TO BE INSTALLED UNDERGROUND, INCLUDING ELECTRIC, TELEPHONE, AND CATV.
15. ALL UTILITY CONSTRUCTION SHALL CONFORM TO THE CHESTERFIELD COUNTY DEPARTMENT OF UTILITY LATEST STANDARDS AND SPECIFICATIONS.

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REV	DATE	DESCRIPTION
1	1-07-04	PER COUNTY COMMENTS
2	2-19-04	PER OWNER MODIFICATIONS

PROJECT TITLE IRONBRIDGE PARK SOCCER FIELD #20	SHEET TITLE NOTES AND SECTIONS
--------------------------------------------------------------	------------------------------------------

DATE	10-27-03
H&A PROJECT NO.	3979-10
CLIENT PROJECT NO.	
SCALE	AS SHOWN
DRAWN BY	RBP
CHECKED BY	WCW
APPROVED BY	BAL
SHEET NUMBER	C200



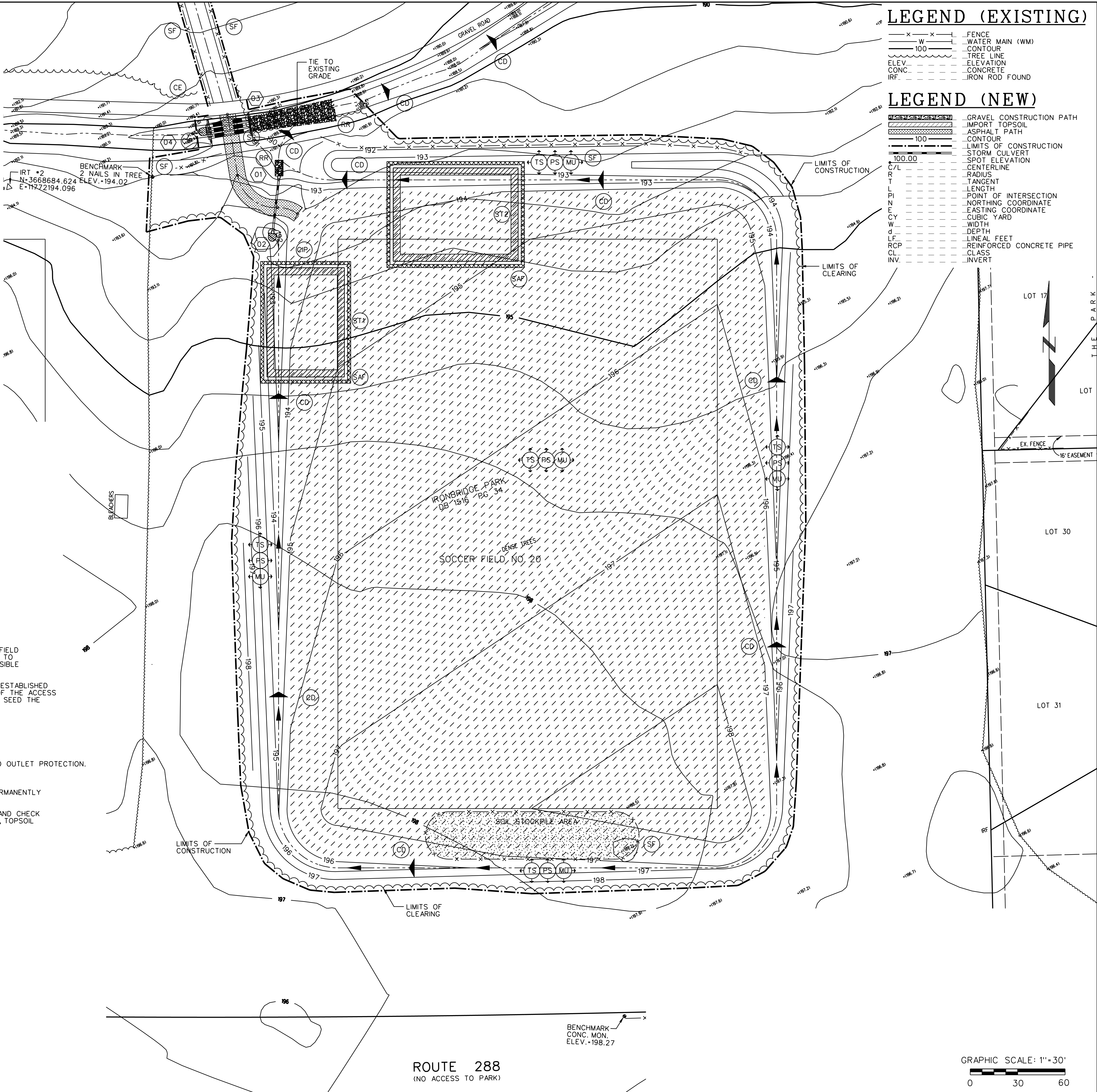
CONSTRUCTION NARRATIVE

1. THE CONTRACTOR SHALL NOTIFY CHESTERFIELD COUNTY ENVIRONMENTAL ENGINEERING, CHESTERFIELD COUNTY PARKS AND RECREATION, AND HANKINS AND ANDERSON, INC. AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE CERTIFIED RESPONSIBLE LAND DISTURBER MUST ATTEND THE PRE-CONSTRUCTION MEETING.
2. CLEAR BUT DO NOT GRUB THE TWENTY FOOT CONSTRUCTION ACCESS PATH IN THE LOCATION ESTABLISHED BY CHESTERFIELD COUNTY PARKS AND RECREATION. INSTALL SILT FENCE ALONG BOTH SIDES OF THE ACCESS PATH, THEN GRUB THE PORTION OF THE ACCESS PATH UNDER THE STONE BASE. PERMANENTLY SEED THE CLEARED AREA ADJACENT TO THE GRAVEL PATH.
3. INSTALL THE CULVERT FROM NO.3 TO NO.4 AND INSTALL CULVERT INLET PROTECTION
4. CLEAR AND GRUB THE REMAINING SITE.
5. INSTALL THE SILT FENCE, SEDIMENT TRAP NO.1 AND SEDIMENT TRAP NO.2.
6. INSTALL THE CULVERT FROM NO.1 TO NO.2 AND INSTALL THE CULVERT INLET PROTECTION AND OUTLET PROTECTION.
7. ROUGH GRADE THE SITE AND INSTALL THE CHECK DAMS.
8. FINE GRADE THE SITE, INSTALL THE UNDERGROUND IRRIGATION SYSTEM, PLACE TOPSOIL, AND PERMANENTLY SEED THE SITE.
9. UPON SUCCESSFUL GERMINATION OF THE PERMANENT SEED, THE SEDIMENT TRAPS, SILT FENCE, AND CHECK DAMS SHALL BE REMOVED. GRADE THE AREA DISTURBED BY THE EROSION CONTROL FEATURES, TOPSOIL SEED AND MULCH.

EROSION CONTROL ABBREVIATIONS

REFERENCED TO THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK", LATEST EDITION

(SAF)	SAFETY FENCE REF. 3.01	
(CE)	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE REF. 3.02	
(SF)	SILT FENCE REF. 3.05	
(CIP)	CULVERT INLET PROTECTION REF. 3.08	
(ST1)	TEMPORARY SEDIMENT TRAP REF. 3.13	
(RR)	RIP RAP REF. 3.19	
(CD)	ROCK CHECK DAM REF. 3.20	
(TS)	TEMPORARY SEEDING REF. 3.31	
(PS)	PERMANENT SEEDING REF. 3.32	
(MU)	MULCHING REF. 3.35	



LEGEND (EXISTING)

X	FENCE
W	WATER MAIN (WM)
100	CONTOUR
---	TREE LINE
ELEV.	ELEVATION
CONC.	CONCRETE
IRF	IRON ROD FOUND

LEGEND (NEW)

---	GRAVEL CONSTRUCTION PATH
---	IMPORT TOPSOIL
---	ASPHALT PATH
---	CONTOUR
---	LIMITS OF CONSTRUCTION
---	STORM CULVERT
---	SPOT ELEVATION
---	CENTERLINE
R	RADIUS
T	TANGENT
L	LENGTH
PI	POINT OF INTERSECTION
N	NORTHING COORDINATE
E	EASTING COORDINATE
CY	CUBIC YARD
W	WIDTH
LF	LINEAL FEET
RCP	REINFORCED CONCRETE PIPE
CL	CLASS
INV.	INVERT

H
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REV	DATE	DESCRIPTION
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PROJECT TITLE
**IRONBRIDGE PARK
SOCCER FIELD #20**
SHEET TITLE
**EROSION AND SEDIMENT
CONTROL PLAN**

DATE	10-27-03
H&A PROJECT NO.	3979-10
CLIENT PROJECT NO.	
SCALE	AS NOTED
DRAWN BY	GAV
CHECKED BY	WCW
APPROVED BY	BAL
SHEET NUMBER	C300

DALE DISTRICT EMERGING GROWTH GPN# 7706699700

PROJECT DESCRIPTION

THIS PROJECT INCLUDES CONSTRUCTION OF A NEW 360' x 240' SOCCER FIELD, WOODEN BRIDGE, IRRIGATION SYSTEM, AND 1000 LF CONSTRUCTION ACCESS PATH TO BE USED FOR A FUTURE WALKING TRAIL. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED TO PROTECT THE EXISTING NEARBY DITCH FROM SEDIMENT. DITCHES AROUND THE FIELD WILL DIRECT RUNOFF FROM THE ADJACENT PROPERTY AND THE FIELD TO THE NEARBY DITCH.

EXISTING SITE CONDITIONS

THE EXISTING SITE IS A MODERATELY SLOPED PROPERTY WITH DENSE WOODS. THE GROUND COVER CONSISTS MOSTLY OF LEAVES FOM THE TREES AND SOME LIGHT UNDERBRUSH. NEARBY EXISTING FEATURES INCLUDE GRAVEL AND DIRT TRAILS AND BALLFIELDS.

EROSION AND SEDIMENT CONTROL NOTES

1. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATION VR 625-02-00.

2. ALL AREAS TO BE DISTURBED SHALL BE PROTECTED BY APPROPRIATE E & S CONTROLS PRIOR TO DISTURBANCE.

3. CONTROL PRACTICES SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. MINOR FIELD CHANGES AND ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS, AND CONFORMS TO SPECIFICATIONS, AND ARE APPROVED BY THE E & S INSPECTOR.

4. LIMING, FERTILIZING, SEEDING AND MULCHING MUST BE COMPLETED AS SOON AS THE SITE HAS BEEN BROUGHT TO GRADE ON ANY PORTION OF THE SITE.

5. STABILIZED CONSTRUCTION ENTRANCES SHALL BE USED AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS.

6. ANY MATERIAL DEPOSITED ON ROADWAYS AS A RESULT OF HAULING OPERATIONS FROM THE SITE, SHALL BE REMOVED IMMEDIATELY. USE A MECH-ANICAL SWEEPER. DO NOT WASH ROADWAY.

7. GRADING OPERATIONS SHALL BE DONE IN CONFORMANCE WITH THE STANDARD SPECIFICATION FOR LAND GRADING.

8. DIRECT SURFACE RUNOFF SO THAT IT DOES NOT RUN DOWN CUT OR FILL SLOPES.

9. MAINTAIN EXISTING DRAINAGE DURING CONSTRUCTION.

10. AN APPROVED COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE AT THE SITE.

11. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL THE SITE HAS BEEN STABILIZED TO THE SATISFACTION OF THE THE E & S INSPECTOR.

12. IMMEDIATELY STABILIZE ALL AREAS DISTURBED BY THE REMOVAL OF SEDIMENT CONTROL MEASURES.

13. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:

A. PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1 SHALL BE STABILIZED IMMEDIATELY UPON INSTALLATION.

B. SEVEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

14. ALL STORM LINES NOT IN STREETS ARE TO BE MULCHED AND SEEDED IMMEDIATELY AFTER BACKFILL.

15. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

16. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

17. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE ENVIRONMENTAL ENGINEERING DEPARTMENT.

18. TREATMENT-1 SOIL STABILIZATION BLANKET SHALL BE USED ON SLOPES GREATER THAN 3:1.

19. NO MATERIALS ARE TO BE STORED OUTSIDE OF THE LIMITS OF CLEARING AND GRADING WITHOUT BENEFIT OF PROPER E & S CONTROL MEASURES.

20. NO E & S MEASURE IS TO BE REMOVED BEFORE ALL CONTRIBUTING UPSTREAM AREAS HAVE BEEN STABILIZED AND APPROVED BY THE E & S INSPECTOR.

21. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

22. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.

B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.

C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.

D. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.

E. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY REGULATIONS.

EROSION CONTROL QUANTITIES

ITEM	QUANTITY
CONSTRUCTION ENTRANCE	1 EA
SILT FENCE	4,360 LF
TOPSOILING	6,388 CY
TEMPORARY SEEDING	23,600 SY
PERMANENT SEEDING	23,600 SY
MULCHING	23,600 SY
CHECK DAMS	6 EA
CULVERT INLET PROTECTION	2 EA

NOTE:
QUANTITIES SHOWN HERE ARE FOR ESTIMATING BOND AMOUNTS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING HIS OWN QUANTITIES.

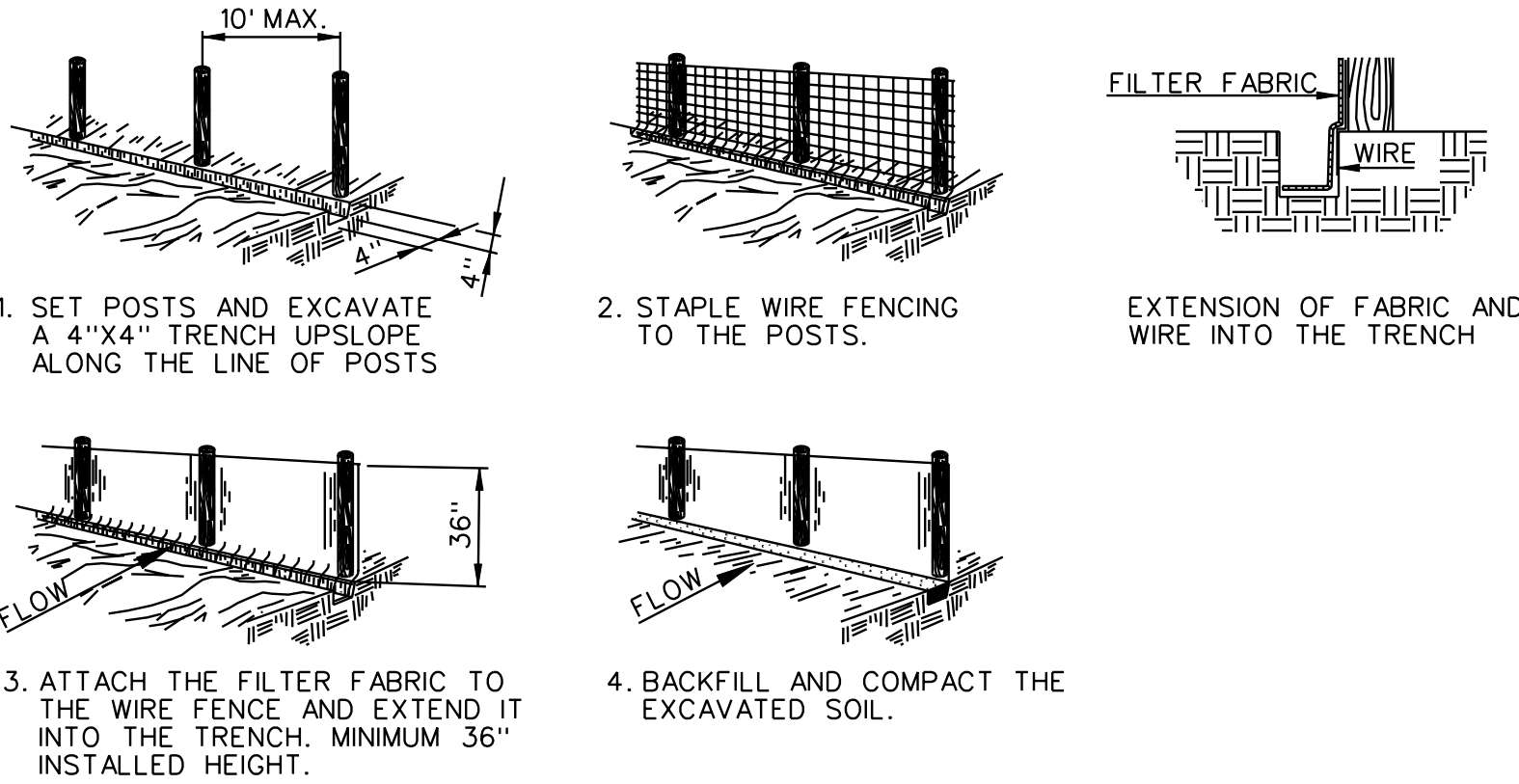
MANAGEMENT STRATEGIES

1. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. SEDIMENT TRAPPING MEASURES SHALL BE INSTALLED AS A FIRST STEP IN CLEARING AND GRADING OPERATIONS.
3. TEMPORARY SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER GRADING.
4. AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS ETC.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.

MAINTENANCE

IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED WEEKLY AND AFTER EACH RUNOFF PRODUCING EVENT. THE FOLLOWING ITEMS WILL BE CHECKED OR REPLACED.

1. THE STONE OUTLETS WILL BE CHECKED REGULARLY FOR SEDIMENT BUILD-UP. IF THE STONE IS CLOGGED WITH SILT, IT WILL BE REMOVED AND CLEANED OR REPLACED.
2. THE SILT FENCES WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION. SEDIMENT IS TO BE REMOVED WHEN IT HAS ACCUMULATED TO 1/2 THE HEIGHT OF THE SILT FENCE. REMOVED SEDIMENT IS TO BE SPREAD IN AN ENVIRONMENTALLY SOUND MANNER TO THE SATISFACTION OF THE ENGINEER AND IMMEDIATELY STABILIZED.
3. ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. AREAS SHOULD BE FERTILIZED, RESEEDED AND MULCHED AS NEEDED.
4. WHEN ALL AREAS HAVE BEEN STABILIZED, EROSION AND SILTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AND THE AREAS RESTORED.



CONSTRUCTION OF A SILT FENCE

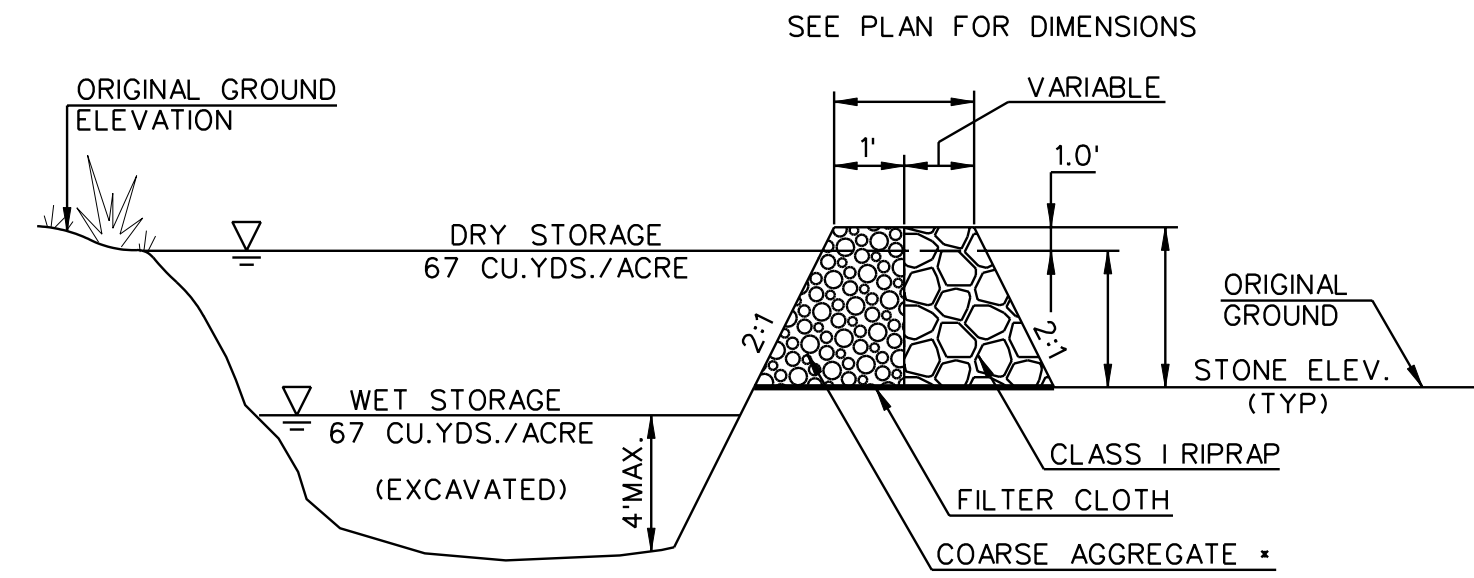
(WITH WIRE SUPPORT)
NO SCALE

ACCEPTABLE TEMPORARY SEEDING
PLANT MATERIALS
"QUICK REFERENCE FOR ALL REGIONS"

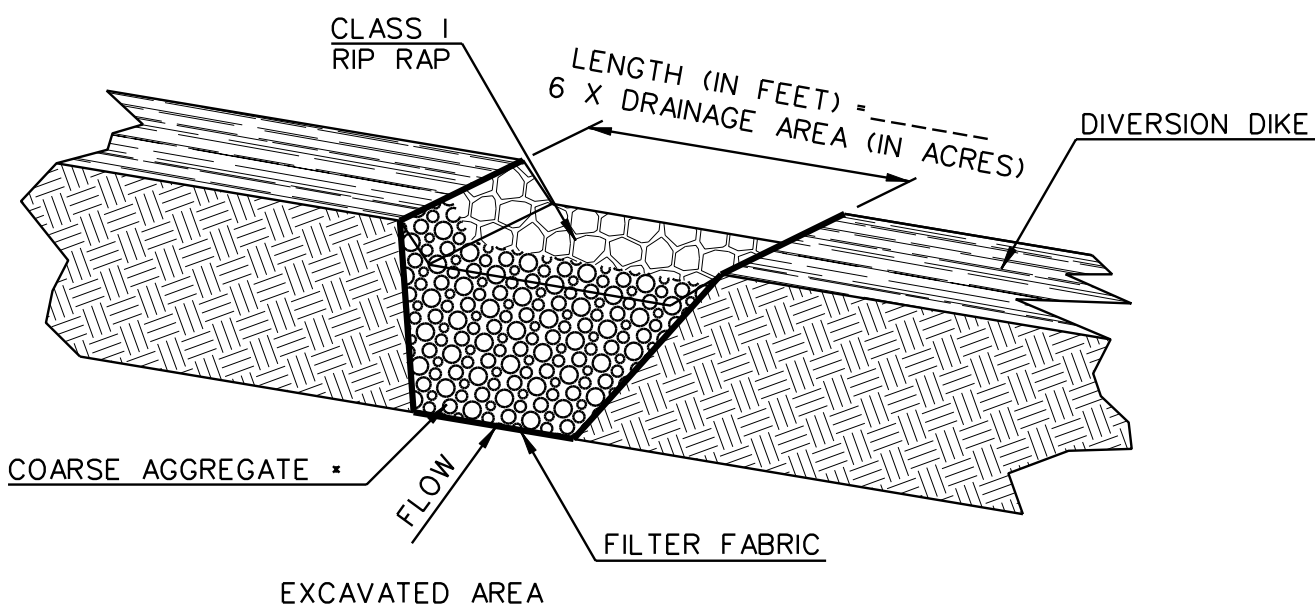
PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 - 100
MAY 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)	50

SITE SPECIFIC SEEDING MIXTURES
FOR COASTAL PLAIN AREA

HIGH MAINTENANCE LAWN - KENTUCKY 31 FESCUE	TOTAL LBS. PER ACRE 200-250 LBS. 100%
GENERAL SLOPE (3:1 OR LESS) - KENTUCKY 31 FESCUE - RED TOP GRASS - SEASONAL NURSE CROP * TOTAL	128 LBS. 2 LBS. 20 LBS. 20 LBS. 150 LBS
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1) - KENTUCKY 31 TALL FESCUE - COMMON BERMUDA GRASS ** - REDTOP GRASS - SEASONAL NURSE CROP * - SERICEA LESPEDEZA ** TOTAL	93-108 LBS 0-15 LBS 2 LBS 20 LBS 20 LBS 150 LBS
* USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW: FEBRUARY 16TH THROUGH APRIL 30TH MAY 1ST THROUGH AUGUST 15TH AUGUST 16TH THROUGH OCTOBER 31TH NOVEMBER THROUGH FEBRUARY 15TH	
** MAY THROUGH OCTOBER, USE HULLED SEED. ALL OTHER SEEDING PERIODS, USE UNHULLED SEED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW-MAINTENANCE MIX DURING WARMER SEEDING PERIODS; ADD 10 - 20 LBS/ACRE IN MIXES.	
	ANNUAL RYE FOXTAIL MILLET ANNUAL RYE WINTER RYE



CROSS SECTION OF OUTLET



OUTLET (PERSPECTIVE VIEW)

TEMPORARY SEDIMENT TRAP

NO SCALE

* COARSE AGGREGATE SHALL BE VDOT NO. 3, 357, OR 5.

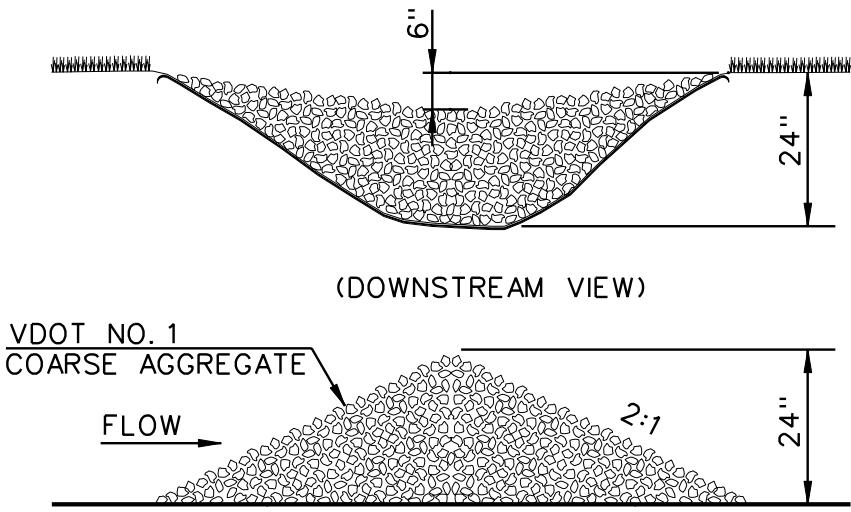
TEMPORARY SEDIMENT TRAP STANDARD SPECIFICATION NO 313
VIRGINIA EROSON AND SEDIMENT CONTROL HANDBOOK.

SEDIMENT TRAP NO.1

A* 1.91 AC
V WET * 128 CY
V DRY * 128 CY
E BOTTOM * 190.45
E WET * 191.45
E DRY * 193.45
BOTTOM DIM* 60 FT x 40 FT
TOP DIM* 69 FT x 49 FT
SPILLWAY* 12 FT

SEDIMENT TRAP NO.2

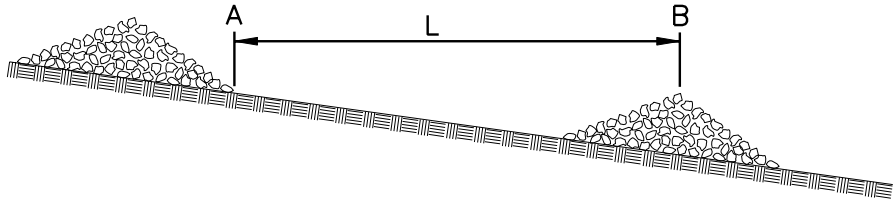
A* 2.84 AC
V WET * 190 CY
V DRY * 190 CY
E BOTTOM * 190.40
E WET * 191.40
E DRY * 193.40
BOTTOM DIM* 70 FT x 50 FT
TOP DIM* 79 FT x 59 FT
SPILLWAY* 17 FT



ROCK CHECK DAM

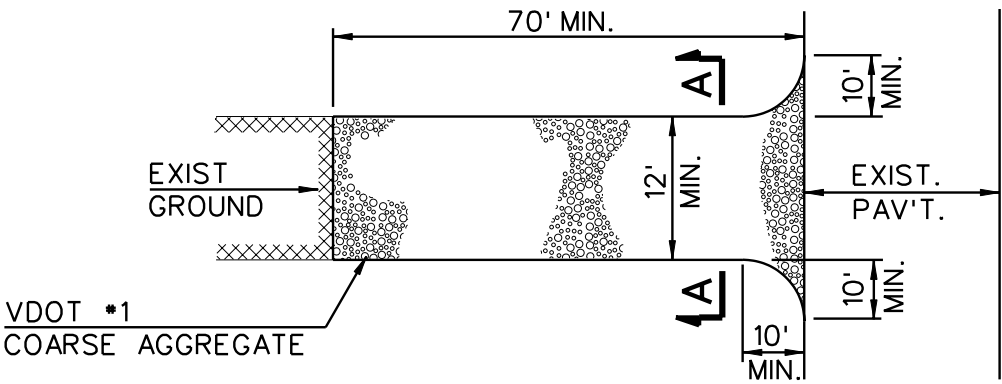
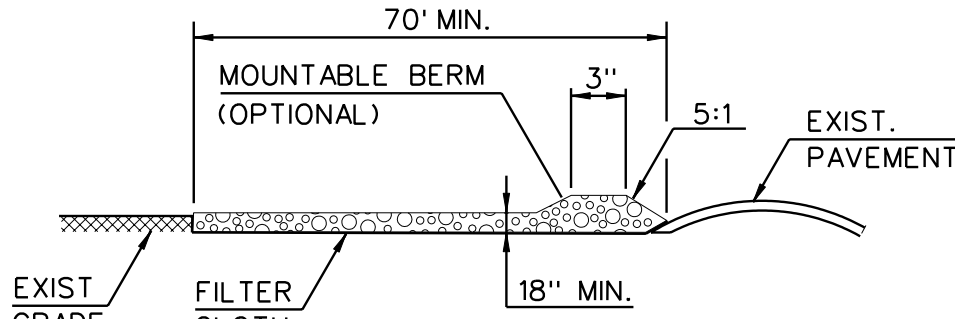
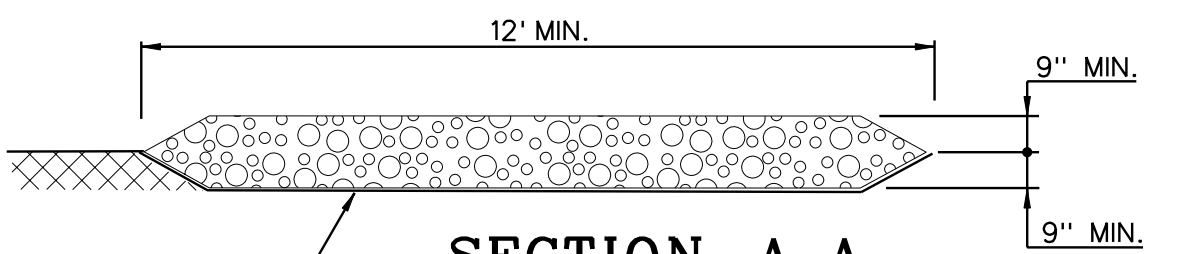
NO SCALE

L = THE DISTANCE SUCH THAT POINTS
A AND B ARE OF EQUAL ELEVATION



SPACING BETWEEN
CHECK DAMS

NO SCALE



STABILIZED CONSTRUCTION
ENTRANCE

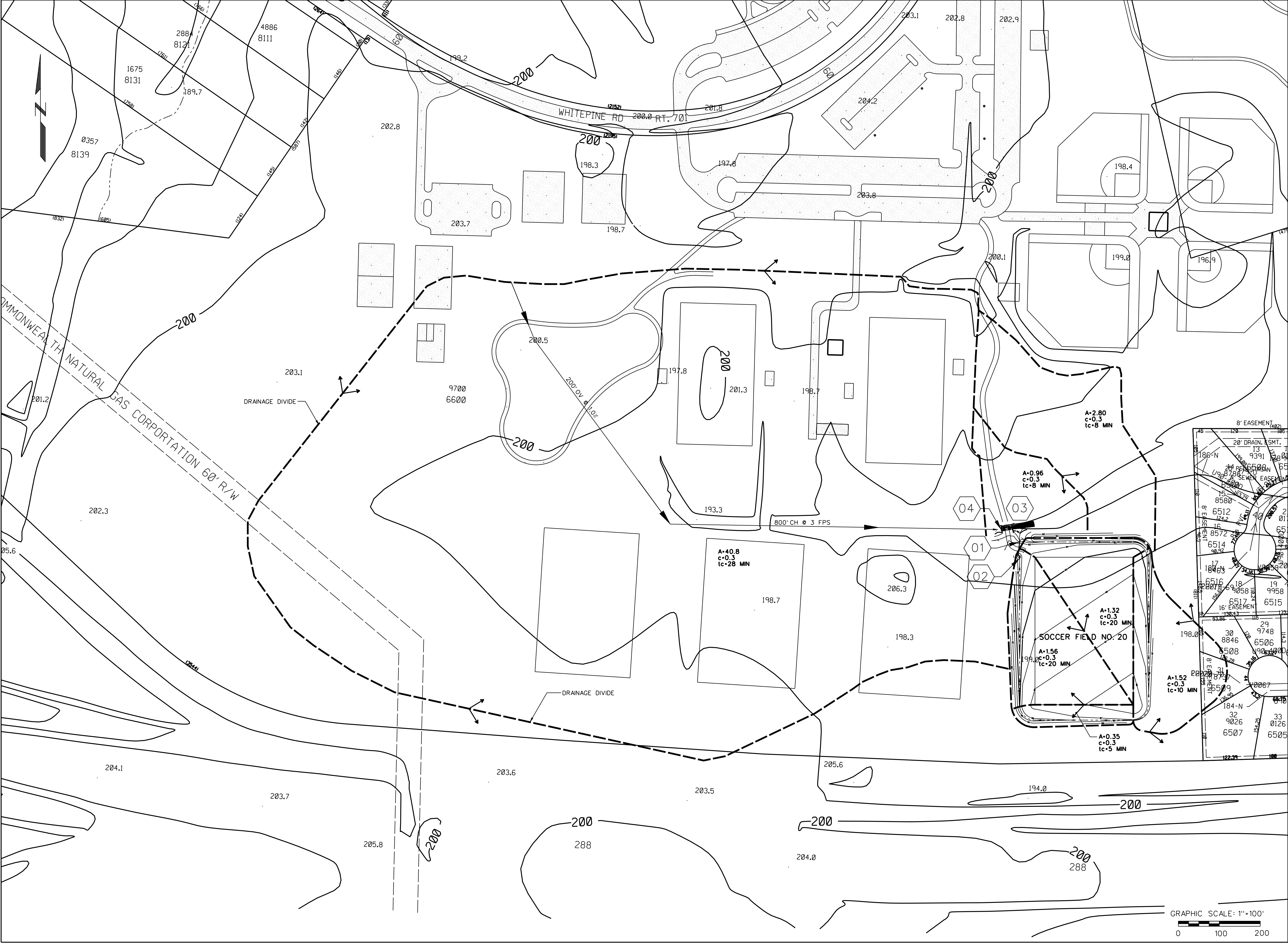
NO SCALE

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REV	DATE	DESCRIPTION
1	1-07-04	PER COUNTY COMMENTS
2	2-19-04	PER OWNER MODIFICATIONS

PROJECT TITLE IRONBRIDGE PARK SOCCER FIELD #20	SHEET TITLE EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
------------------------------------------------------	------------------------------------------------------------------

DATE	10-27-03
H&A PROJECT NO.	3979-10
CLIENT PROJECT NO.	
SCALE	AS SHOWN
DRAWN BY	RBP
CHECKED BY	WCW
APPROVED BY	BAL
SHEET NUMBER	C301



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DESCRIPTION
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PROJECT TITLE
IRONBRIDGE PARK
SOCCER FIELD #20

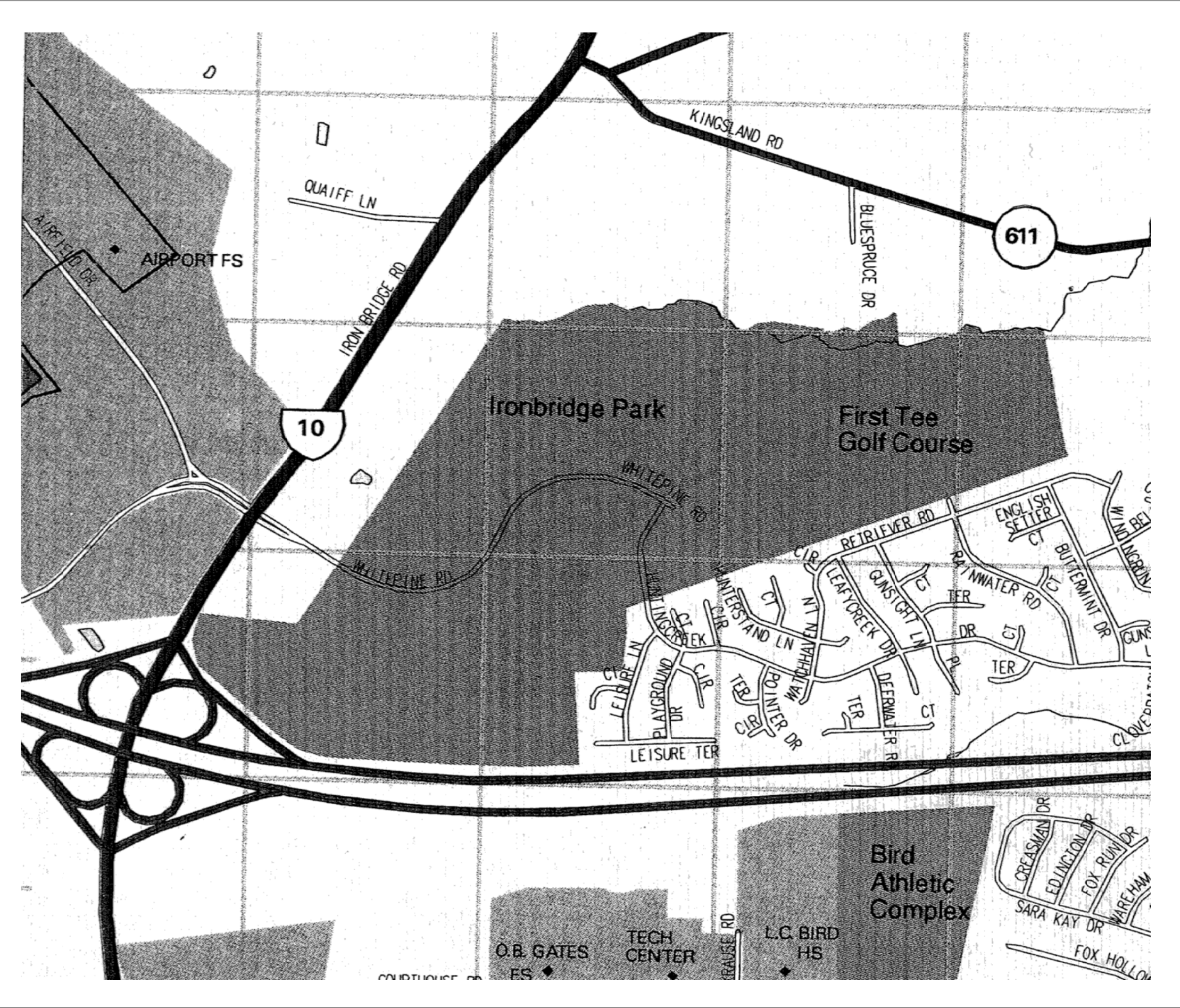
SHEET TITLE
DRAINAGE AREA MAP

DATE	10-27-03
H&A PROJECT NO.	3979-10
CLIENT PROJECT NO.	
SCALE	1" = 100'
DRAWN BY	RBP
CHECKED BY	WCW
APPROVED BY	BAL
SHEET NUMBER	C400

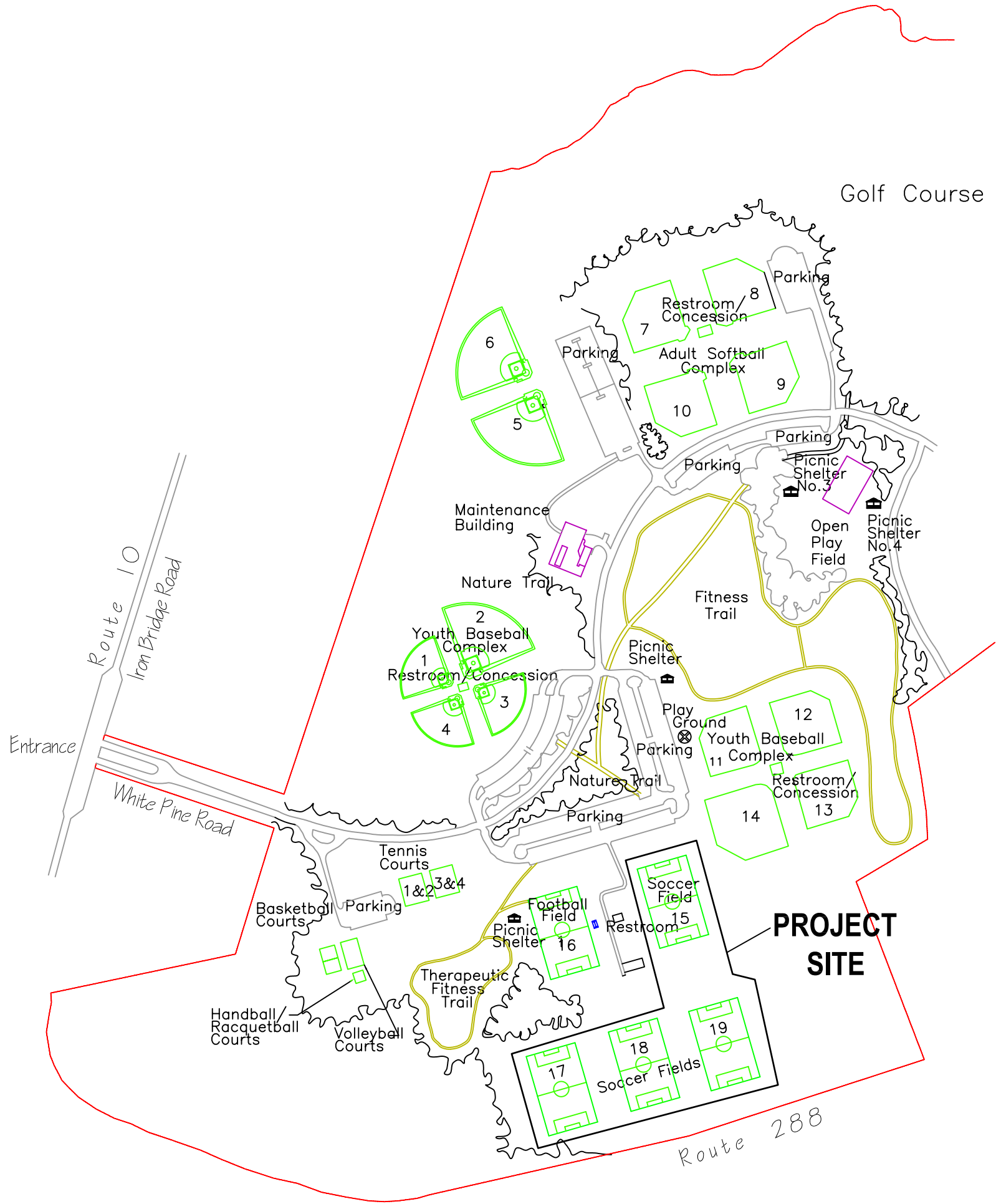
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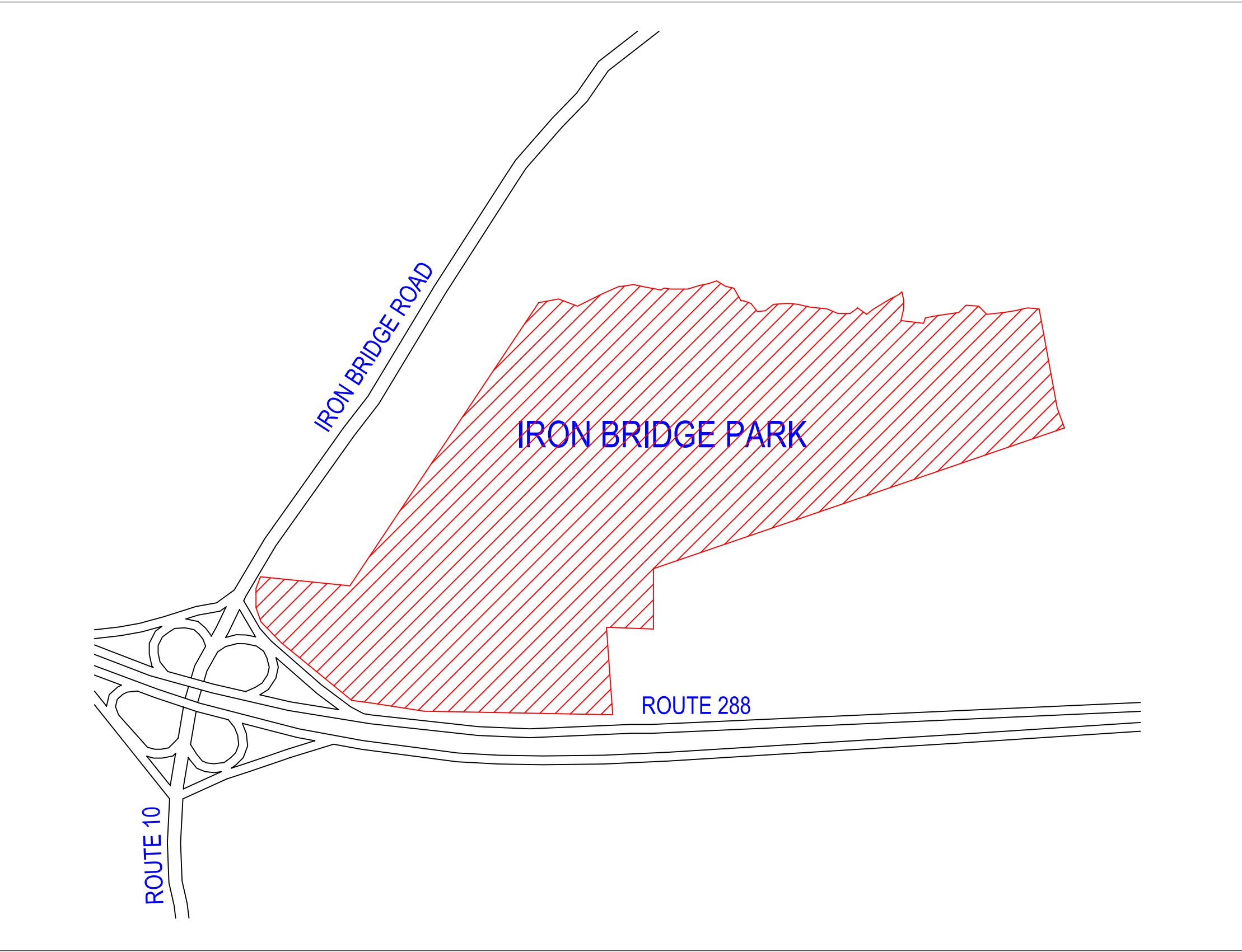
DALE DISTRICT EMERGING GROWTH GPIN# 7706699700



SITE MAP



LOCATION MAP

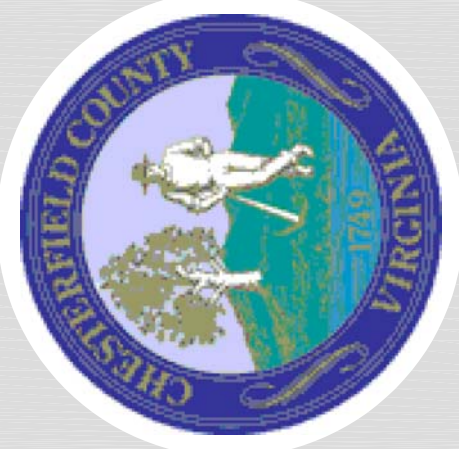


VICINITY MAP

- NOTES:**
1. ALL PIPE ON FIELD TO BE MINIMUM OF 1".
 2. CONTROLLER SHALL BE (1) 12 STATION AND (1) 48 STATION TORO SENTINEL RADIO CONTROLLED UNITS, INSTALL 24 STATION ELECTRIC TO HYDRAULIC CONVERTER ADJACENT TO CONTROLLER FIELD LOCATED IN GENERAL LOCATION AS SHOWN ON THE DRAWING.
 - 3.SYSTEM DIAGRAM TARGETS 60 PSI AT HEADS.
 4. ALL IRRIGATION HEADS SHALL BE TORO 640 - 02 - 41 CHECKOMATIC NOZZLE FOR 11 GPM PER HEAD; MAX {3} HEADS PER ZONE=33 GPM PER ZONE.
 5. HEADS SPACED AT 55' ON CENTER BOTH DIRECTIONS.
 6. PROVIDE PARTIAL HEADS AS SHOWN ON THE DRAWINGS. ROTATE FOR MAXIMUM COVERAGE.

ZONES

- 1.1.[360] 2.[360] 3.[360]
- 2.10.[360] 11.[360] 12.[360]
- 3.4.[360] 5.[360] 6.[360]
- 4.7.[360] 8.[360] 9.[360]
- 5.22.[360] 23.[360] 24.[360]
- 6.13.[360] 14.[360] 15.[360]
- 7.19.[360] 20.[360] 21.[360]
- 8.17.[360] 18.[360] 19.[360]
- 9.25.[360] 26.[360] 27.[360]
- 10.28.[360] 29.[360] 30.[360]
- 11.31.[360] 32.[360] 33.[360]
- 12.34.[360] 35.[360] 36.[360]
- 13.37.[360] 38.[360] 39.[360]
- 14.40.[360] 41.[360] 42.[360]
- 15.43.[360] 44.[360]
- 16.45.[360] 46.[360] 47.[360]
- 17.48.[360] 49.[360] 50.[360]
- 18.51.[360] 52.[360] 53.[360]
- 19.54.[360] 55.[360] 56.[360]
- 20.57.[360] 58.[360] 59.[360]
- 21.60.[360] 61.[360] 62.[360]
- 22.63.[360] 64.[360] 65.[360]
- 23.66.[360] 67.[360] 68.[360]
- 24.69.[360] 70.[360] 71.[360]
- 25.72.[360] 73.[360] 74.[360]
- 26.75.[360] 76.[360] 78.[360]
- 27.79.[360] 80.[360] 81.[360]
- 28.88.[360] 89.[360] 90.[360]
- 29.82.[360] 83.[360] 84.[360]
- 30.85.[360] 86.[360] 87.[360]
- 31.100.[360] 101.[360] 102.[360]
- 32.91.[360] 92.[360] 93.[360]
- 33.97.[360] 98.[360] 99.[360]
- 34.94.[360] 95.[360] 96.[360]
- 35.103.[360] 104.[360] 105.[360]
- 36.112.[360] 113.[360] 114.[360]
- 37.106.[360] 107.[360] 108.[360]
- 38.109.[360] 110.[360] 111.[360]
- 39.118.[360] 119.[360] 120.[360]
- 40.121.[360] 122.[360] 123.[360]
- 41.130.[360] 131.[360] 132.[360]
- 42.115.[360] 116.[360] 117.[360]
- 43.124.[360] 125.[360] 126.[360]
- 44.127.[360] 128.[360] 129.[360]
- 45.133.[360] 134.[360] 135.[360]
- 46.142.[360] 143.[360] 144.[360]
- 47.136.[360] 137.[360] 138.[360]
- 48.139.[360] 140.[360] 141.[360]
- 49.148.[360] 149.[360] 150.[360]
- 50.151.[360] 152.[360] 153.[360]
- 51.160.[360] 161.[360] 162.[360]
- 52.145.[360] 146.[360] 147.[360]
- 53.154.[360] 155.[360] 156.[360]
- 54.157.[360] 158.[360] 159.[360]



HARRY G. DANIEL PARK
AT IRONBRIDGE PARK
6600 WHITE PINE ROAD
RICHMOND, VA 23237
SOCCER FIELDS

DATE 2/23/04

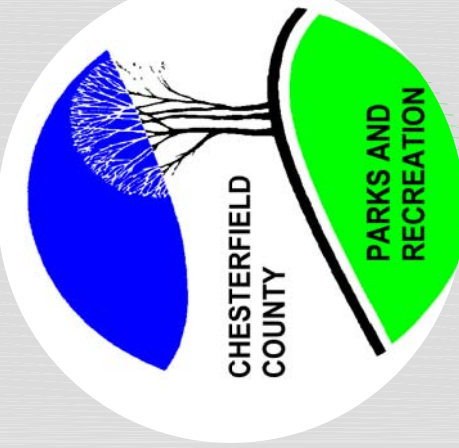
SHEET 1 OF 2

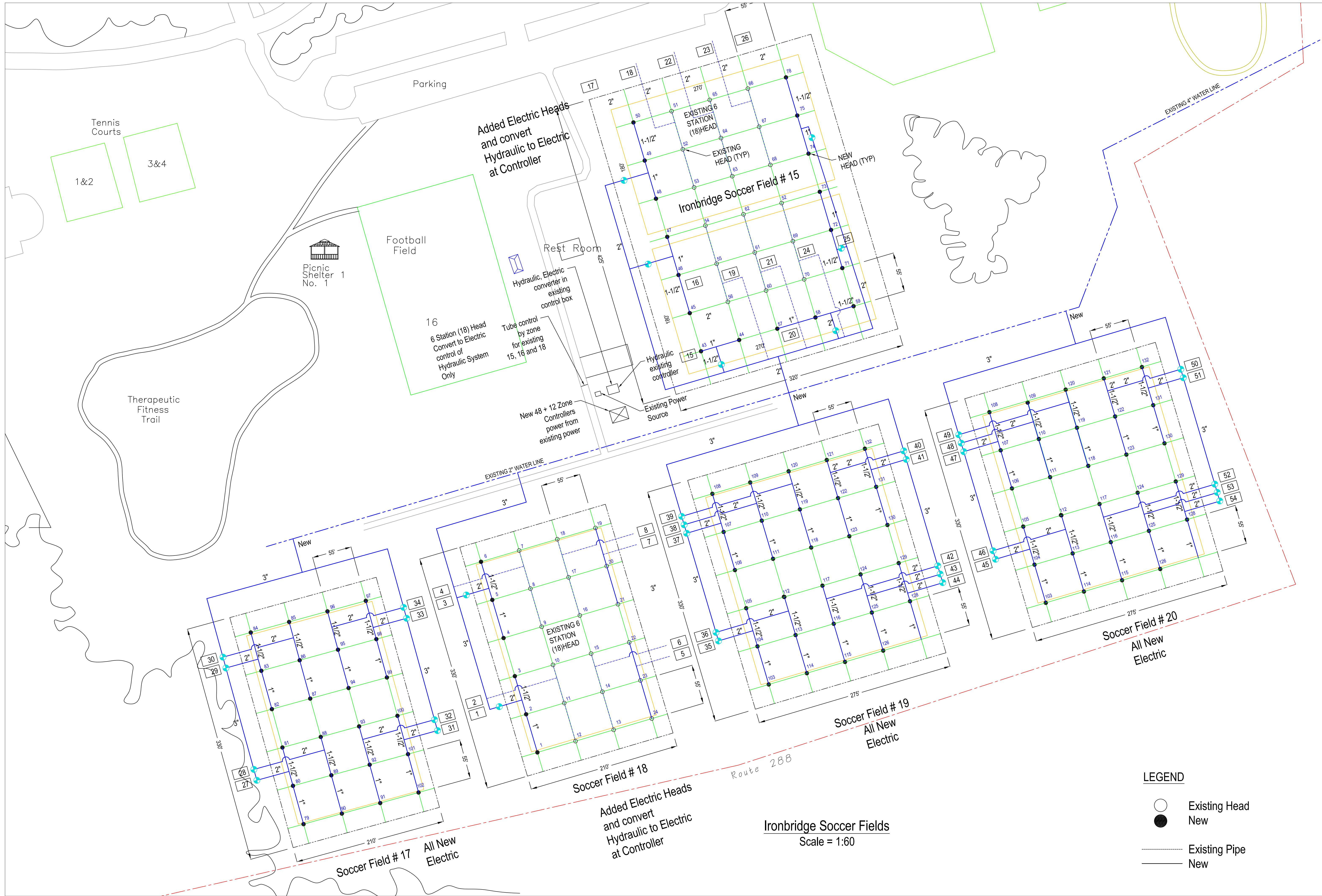
CHESTERFIELD COUNTY PARKS AND RECREATION
DESIGN AND CONSTRUCTION

REVISIONS
NOTE

IRRIGATION LAYOUTS

SHEET TITLE





LEGEND

- Existing Head
- New
- Existing Pipe
- New

Ironbridge Soccer Fields
Scale = 1:60



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